

THE MINING AND METALLURGICAL JOURNAL.

FORMERLY THE PACIFIC COAST BULLION.

VOL. XVII., No. 8

LOS ANGELES, CAL., JULY 15, 1897

PRICE, 10 CENTS

The Gold & Silver Extraction Co.
OF AMERICA, LIMITED.



TRADE MARK
CAPITAL,
\$50,000

The Original Cyanide Process
Simple Reliable Economical
Gold Medal Columbian Exposition
1893

Mine Owners and others having Refractory and Low Grade Gold and Silver Ores and Tailings should have their material tested by

The MacArthur-Forrest Cyanide Process
Samples assayed and fully reported upon. Particulars upon application.

ADVISORY BOARD IN THE UNITED STATES

Geo. A. Anderson, General Manager;
Hugh Butler, Attorney; W. S. Ward;
J. Stanley Muir, Technical Manager.

CALIFORNIA AND NEVADA AGENT,
Bertram Hunt, 216 Sansome St., San Francisco

Office: McPhee Building, Denver, Col.

THE EDWARD P. ALLIS COMPANY

MANUFACTURERS OF

Mining, Milling and Smelting Machinery

Crushers, Concentrators, Pumps, Compressors, Hoists, Boilers, Reliance Crushing Rolls, Reynolds Corliss Engines, &c.

Send for Catalogue.

MILWAUKEE, WIS.

THE RUSSELL PROCESS

The Improved Method of Lixiviation for Free and Rebellious Silver and Gold Ores and Tailings, Either Raw or After Roasting. Send for New Publications Just Issued

The Russell Process Co. - Park City, Utah.

— THE —
ROESSLER & HASSLACHER Chemical Co.

100 William St., New York

CYANIDE

Peroxide of Sodium

Hyposulphite of Soda

Chloride of Lime

Sulphide of Iron



Trade Mark

And Other Chemicals for Mining Purposes.

THE California
THE CELEBRATED
HAMMERED STEEL Shoes and Dies
Warranted Not to Clip Off or Batter Up. A HOME PRODUCTION

ALSO

Best Refined Cast Tool Steel, Well Bit Steel, Heavy and Light Iron and Steel forgings of all Descriptions.

GEO. W. PENNINGTON & SONS., 218 and 220 Folsom street, SAN FRANCISCO, CAL.
PLEASE MENTION THE JOURNAL

ADAMANTINE SHOES & DIES

AND

CHROME CAST STEEL

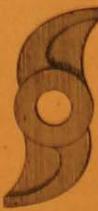
Cams, Tappets, Bosses, Roll
Shells and Crusher Plates.



Stamp Shoe

Stamp Dies

Kent Ave. & Keap St., BROOKLYN, N. Y. Stamp Cam



The Pelton Water Wheel

Affords the Most Economical and Reliable Power for Mining, Electric and all other purposes.

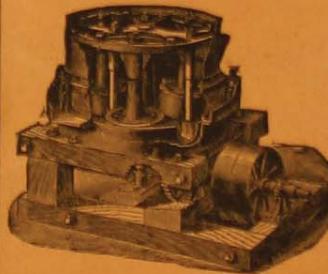
7000 WHEELS NOW RUNNING

PELTON WATER WHEEL CO., 121 Main St., San Francisco, Cal.

PARKE & LACY COMPANY

21 and 23 FREMONT STREET, SAN FRANCISCO, CAL.

LICENSEE FOR THE MANUFACTURE AND SALE OF



The Huntington
Centrifugal Roller
Quartz Mill

THE HUNTINGTON MILL is so well and favorably known among mining men throughout the world that any description of it would seem superfluous. They are in use in the United States, Canada, Mexico, Central and South America, Australia, China, Japan, and South Africa. In fact, wherever mines exist, and have given the best satisfaction of all quartz crushing mills.

The construction of this mill has lately been much improved and we claim it to be the CHEAPEST, MOST EFFICIENT, SIMPLEST, AND MOST DURABLE MILL UPON THE MARKET.

← CATALOGUE UPON APPLICATION →

GRANT COUNTY
IS IN THE LEAD AND
SILVER CITY

SILVER CITY IS THE BEST TOWN IN NEW MEXICO
Now is the time to invest. Address D. P. CARR, REAL ESTATE and MINING BROKER,
SILVER CITY, N. M.

Consolidated Kansas City Smelting & Refining Co.

BUYERS OF ALL CLASSES OF

BULLION, MATTE, ORE & MILL PRODUCTS, GOLD & SILVER BARS

Smelting Works

Leadville, Colorado.
El Paso, Texas.
Argentine, Kansas.

REFINERIES: ARGENTINE KANSAS.

FOLLOWING CODES USED: At Argentine, Kansas,
A. B. C.

Merring & Neil's
and Bedford McNeill's.

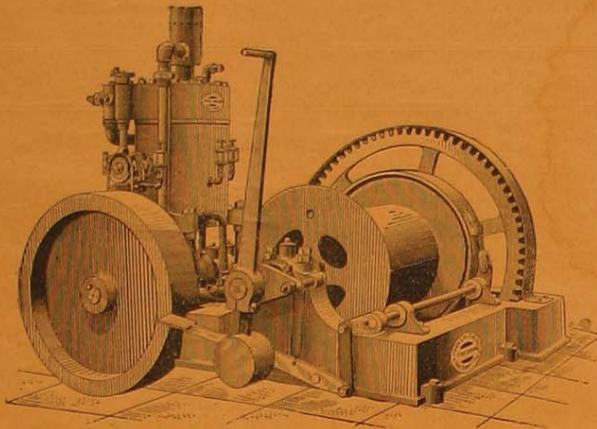
Ore Purchasing Agencies

Spokane, Wash. Salt Lake, Utah.
Leadville, Colorado. Denver, Colorado.
El Paso, Texas. Argentine, Kansas.
Cripple Creek, Colorado.

McDearmon & Co.
Asbestos Boiler & Steam Pipe Coverings
Asbestos Cement for Boilers, drums, Heaters,
Etc. Special facilities for supplying
the mining trade.
Pacific Coast Agent for H. W. John's Co's Asbestos
Sectional Coverings.
422 Sacramento Street, San Francisco, Cal.

AXELSON MACHINE COMPANY
HIGH GRADE MACHINE WORKS
SPECIAL TOOLS TO ORDER
Gear Cutting, Milling and Universal Grinding,
Jobbing and Repairing.
1101-3-5 North Main Street, Los Angeles, Cal.

"Union" Hoist



Union Gas or Oil Engine and Hoist Combined, on strong, iron base.

No Fire No Steam No Boiler No Danger

TEN YEARS' EXPERIENCE. TWO THOUSAND ENGINES IN USE.

Started instantly. Compact, strong, simple, efficient, economical. Perfectly governed, so that oil is used only in proportion to the work done. No expense when idle.

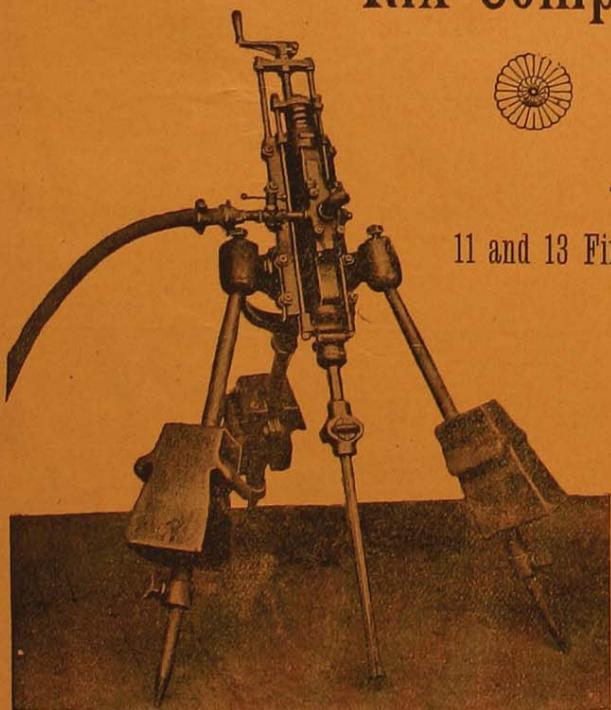
Particularly Adapted to Mining in Localities Where
Fuel and Water are Expensive.

Built in the following sizes:—1 H.P., 4 H.P., 6 H.P., 8 H.P., 10 H.P., 15 H.P.,
20 H.P., 30 H.P., 40 H.P.

Send for Catalogue and state what H. P. required.

Union Gas Engine Co.,
301 Howard Street, San Francisco, Cal.

Rix Compressed Air Machinery Co.



11 and 13 First Street, San Francisco, Cal.

MANUFACTURERS OF

Pneumatic Machinery of all kinds,
Rock Drills,
Air Compressors,
Compressed Air Hoisting Engines,
Stone Cutting and Carving Tools, driven by
Compressed air.
Compressed Air Machinery for quarrying stone
Compressed Air Pumps for both cold & hot air
Appliances for reheating compressed air.
"Ferrite" Shoes and Dies.
Projectile Steel Shoes and Dies,
Guaranteed to be the most economical Shoe and Die
on the market.

ALSO DEALERS IN

General Mining Machinery

Send for Latest Catalogue.

Manufacturers and Importers

245 SOUTH SPRING STREET,
LOS ANGELES, CAL.

We also carry a full line of Magnifiers, Microscopes, Compasses, Barometers, Surveying Instruments, Thermometers, and Hydrometers in stock in both our wholesale and retail departments.

SEND FOR OUR PRICES



FRANKLIN BOOTH
MINING ENGINEER AND METALLURCIST

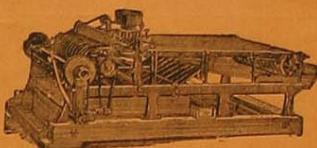
With L. BOOTH & SONS,
MECHANICAL ENGINEERS AND DEALERS IN

Machinery and Mining Supplies

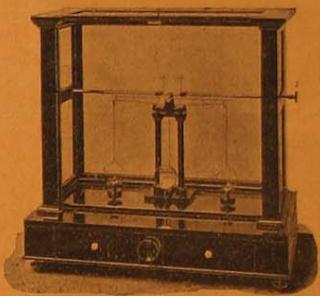
AGENTS Union Gasoline Hoists Joshua Hendy Stamp
Mills, Rock Breakers, Ore Buckets, and Cars, Davis Horse Whim, Dean
and Marsh Steam Pumps, Pennsylvania Boiler Works, Chandler
Taylor Engines, Agent Dodge Manufacturing Co's Wood-
Split Pulleys and Power Transmission Machinery.
Rubber and Leather Belting and Oils.

338 North Main street, BAKER BLOCK, Los Angeles, Cal.

WOODBURY CONCENTRATOR



No. 141 First St., San Francisco



AINSWORTH NO. 043

SENSIBILITY.....1-100 MILLIGRAMME
Ten-inch beam on which you can weigh from
1-100 to 1 Milligramme with a one milligramme
rider.

Complete catalogue of Assayers' and Chemists'
supplies, including this and other balances, mailed
upon application. SELLING AGENTS,

The Denver Fire Clay Co.,
1742-1746 Champa St., Denver, Colo.
P. O. BOX, 1540

FULL LINE OF

Chemical Glassware

Of every descrip-
tion carried in
stock, and sold
wholesale and re-
tail at

EASTERN
PRICES

BY THE
**Pacific Optical
Company.**

Manufacturers and Importers

245 SOUTH SPRING STREET,
LOS ANGELES, CAL.

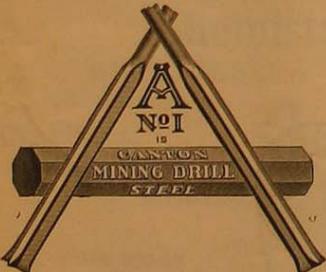
We also carry a full line of Magnifiers, Microscopes, Compasses, Barometers, Surveying Instruments, Thermometers, and Hydrometers in stock in both our wholesale and retail departments.

ALPHABETICAL INDEX TO ADVERTISERS

A	F	L	R
Abbott, W. O.....	4	Fairbanks, Morse & Co.....	19
Agramonte, C. H. M. y.....	4	Fowler, G. C.....	18
Allis Co., Edward P.....	1	Fulton Engineering & Shipbuilding Works.....	24
Alphabetical Index to Advertisers.....	3	Joyce, Theo.....	24
American Zinc Lead Co.....	1	Lloyd, B. T.....	24
Angels Iron Works.....	23	Lumigan & Calkins.....	21
Anti-Caloric Covering Co.....	24	Los Angeles Business College.....	19
Aubury, L. E.....	5	Los Angeles Sewer Pipe Co.....	19
Austin Bros.....	17	L. A. Sewer Pipe Co.....	19
Axelson Machine Co.....	2	Luckhardt, C. A.....	19
B	G	H	S
Bailey A. A.....	23	Garrett, F. C.....	23
Baker Iron Works.....	28	Garratt, Co., W. T.....	23
Best Manufacturing Co.....	18	Goldsmith Bros.....	3
Bi Metallic Assay Office.....	21	Gold & Silver Extraction Co. of America.....	18
Birch & Co., W. H.....	24	Gottfried, F.....	6
Booth & Sons, L.....	2	Grimwood, Chas. P.....	6
Booth & Co., C. B.....	27		
Bradley Pulverizer Co.....	6		
Braun & Co., F. W.....	6		
Burlingame, E. E.....	20		
Byron Jackson Machine Works.....	3		
C	H	I	T
Cagwin, A. S.....	24	Hallowell, E. L.....	24
Cal. Perforating Screen Co.....	21	Hammond Manufacturing Co.....	20
Cal. Wire Works.....	25	Hanks Abbott King Perforating Co.....	24
Carr, D. P.....	1	Harrington & King.....	6
Chicago & Aurora Smelting & Refining Co.....	19	Harrison v. McCann.....	4
Chicago School of Assaying.....	17	Hendry Machine Wks., Joshua.....	6, 21 & 28
Chrome Steel Works.....	1	Hendrie & Bothoff Mfg Co.....	16
Cobb & Hessleuey.....	17	Hersey, Clarence.....	27
Colorado Iron Works.....	22	Hoegge, Wm. H.....	6
Commercial Pig Co.....	18	Hoyt, Geo. F.....	16
Cook, Fred R.....	20		
Collins Manufacturing Co., F. F.....	19		
Consolidated Pipe Co.....	3		
Con. Kansas City Smelting & Refining Co.....	1		
Culver & Co., J. P.....	20		
D	I	O	U
Denniston, E. G.....	21	Incorporated Mines.....	22
Denver Fire Clay Co.....	17 & 2	Ireland Jr., Wm.....	23
Denver Public Sampling Wks.....	18		
Denver & Rio Grande Railway.....	20		
Dickman & Mackenzie.....	16		
Doub, D. M.....	16		
Donnelan, K.....	21		
Ducommun, C.....	25		
E	J	P	V
Eagar & Co.....	6	Jeffrey Manufacturing Co.....	6
Endlich & Hoyt.....	21	Johannesburg Sampling Works.....	20
Eveleth & MacLymont.....	20	Johnson, F. M.....	17
K			
Kempton, C. W.....	5		
Kern Co. Assay Office.....	24		
Kratzmer, A.....	4		
Krogh Manufacturing Co.....	17		
L	N	O	
Lacy Manufacturing Co.....	19	Nelden Judson Drug Co.....	24
Leffel & Co., James.....	24	Nelson & Co., H. L.....	23
Leonard & Ellis.....	24	Nolan & Smith.....	6
Lexow, Theo.....	4		
Lloyd, B. T.....	24		
Lumigan & Calkins.....	21		
Los Angeles Business College.....	19		
Los Angeles Sewer Pipe Co.....	19		
L. A. Sewer Pipe Co.....	19		
Luckhardt, C. A.....	19		
Luckhardt's Combined Assay Office.....	16		
M			
Machinery and Electrical Co.....	23		
Masters, J. H.....	3		
Matteson Manufacturing Co.....	25		
McDearmon & Co.....	6		
McGlew Ore Concentrator.....	25		
McIntosh & Wolman.....	19		
Metal Market.....	23		
Mine & Smelter Supply Co.....	18		
Miners Assay Office.....	2		
Mining Stock Quotations.....	18		
Montague, W. W.....	21		
Montgomery Machinery Co., J. H.....	2		
Morgan & Co.....	2		
O			
Oakland Iron Wks.....	16		
Onlandt & Co., N.....	19		
Ore Tariffs.....	26		
P			
Pacific Metal Wks.....	27		
Pacific Mining Machinery Co.....	5		
Pacific Optical Company.....	2		
Pacific Tank Co.....	21		
Paraffine Paint Co.....	23		
Parke & Lacy Co.....	1 & 28		
Peltton Water Wheel Co.....	1		
Pennington & Sons Co., Geo. W.....	1		
Pettee, J. W.....	17		
Petter, A. J.....	17		
Pollock, James A.....	20		
Price & Son, Thos.....	24		
Pueblo Smelting & Refining Co.....	24		
Puget Sound Reduction Co.....	27		
REGIS CHAUVENET & BROTHER,			
Analystical Chemists and Assayers,			
Established 1870			
709 Pine Street, St. Louis, Mo.			
Samples sent by mail receive prompt attention. Geological Reports and Mining Examinations.			
VON SCHULZ & LOW			
ASSAYERS, CHEMISTS, and BULLION DEALERS.			
P.O. Drawer 1537 1746 Champa St., DENVER, COLO			
Prices for Specimen assays: Gold, Silver, Lead or Copper, \$1.00 each; any two, \$1.50; any three, \$2.50. Complete price list and sample bags for mailing furnished on application.			

John Wigmore and Sons Co.,**GENERAL MINING SUPPLIES****HEAVY HARDWARE****IRON AND STEEL**

AGENTS FOR

CANTON DRILL STEELJohn A. Roebling's Sons Co.'s
WIRE CABLES.**Giant Powder**117 to 123 S. LOS ANGELES ST.
LOS ANGELES, CAL.**CONSOLIDATED PIPE COMPANY,**

IRON AND STEEL WATER PIPE A SPECIALTY

IRON & STEEL
WATER PIPE & WELL CASING

73-889 STEPHENSON AVENUE,

LOS ANGELES, CAL.

A. C. HARPER, Proprietor.

Telephone Main 420

Post Office Box 867

W. O. ABBOTT, ASSAYERASSAYING IN ALL ITS BRANCHES
CHEMICAL DETERMINATIONS ACCURATELY MADE

TOMBSTONE - - -

ARIZONA

DICKMAN & MACKENZIEMINING ENGINEERS,
ASSAYERS AND CHEMISTS

1224 Rookery Bldg, Chicago Box 77, El Paso, Texas

Orders by mail or express promptly attended to. Mining properties examined.

THE LOS ANGELES MINING BUREAU,Cor. Temple and New High Sts., Los Angeles,
We have Eastern and foreign correspondents
who are seeking good mining properties for investment. This Bureau will examine and place
choice mining properties in California, Nevada,
Arizona, New and Old Mexico. Critical and
accurate tests of ore made. Best references
given. For any information, address DR.
STEPHEN BOWERS, President; H. C. SIGLER,
Secretary.**REGIS CHAUVENET & BROTHER,**

Analytical Chemists and Assayers,

Established 1870

709 Pine Street, St. Louis, Mo.

Samples sent by mail receive prompt attention. Geological Reports and Mining Examinations.

VON SCHULZ & LOW

ASSAYERS, CHEMISTS, and BULLION DEALERS.

P.O. Drawer 1537 1746 Champa St., DENVER, COLO

Prices for Specimen assays: Gold, Silver, Lead or Copper, \$1.00 each; any two, \$1.50; any three, \$2.50. Complete price list and sample bags for mailing furnished on application.

GOLDSMITH BROS.

Refiners and Assayers

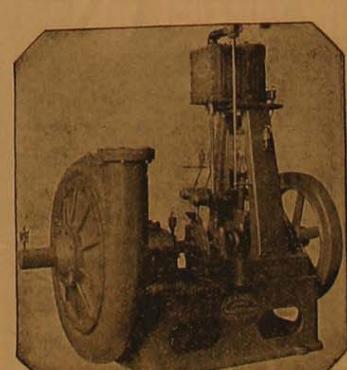
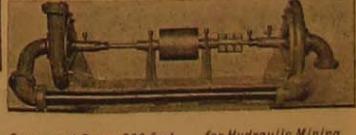
63 and 65 Washington Street,

Chicago, Illinois

Shipments of Gold and Silver Bullion solicited. We pay 20.25 per ounce for gold, market price for silver contained therein. No charge for separating. ASSAYE of Ores and ANALYSIS of all kinds Promptly Made.

BYRON JACKSON MACHINE WORKS

625 6th STREET

San Francisco, - - California
MANUFACTURERS OFJackson's Single-Valve Cross-Compound Steam Engines.
"Light Weight" Oil Motors,
"Whirlpool" Centrifugal Pumps
"Light Weight" Horse Forks,
"Feeders" for Threshing Machines
"Eclipse" Stackers, and
"Acme" Hay Rakes.WRECKING PUMP AND STEAM ENGINE FOR
30 FOOT LIFT.

Compound Pump 200 foot for Hydraulic Mining

C. W. KEMPTON
MINING ENGINEER

Oro Blanco, Arizona
20 years experience in exploration, mining and
milling. 10 years as superintendent and manager,
Boston, New York, and Chicago references.

G. WHEATLEY.
Mines and Mining

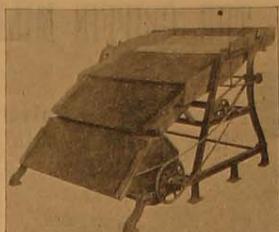
CORRESPONDENCE SOLICITED
LOS ANGELES, CAL.

JOHN. T. REED

Assayer and
Analytical Chemist

Assays made for all valuable metals. Analysis made of all valuable minerals. Special attention given to the sampling of mines. Estimating the value of and testing the nature of their ores, 100 pound lots of ore sampled, and working tests made by Cyanide, Amalgamation and Chlorination Processes.

OFFICE 522 COURT STREET,
San Bernardino, California



Pacific Amalgamator

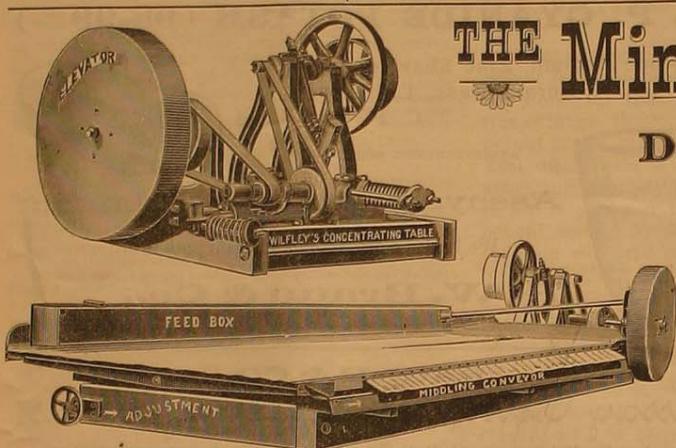
PAT. APRIL 30, 1897

FOR PLACER OR MILL USE

No other plate necessary where the Pacific Amalgamator is used. These machines are sent out with a Guarantee backed by people who are responsible for what they say. They will place them in mills and sell subject to doing amount and character of work guaranteed before payment is made.

Mills in all parts of the country are throwing out plates and replacing them with Pacific Amalgamators

Pacific Mining Machinery Co., 129 First St., San Francisco



THE Mine Smelter Supply Co. DENVER, COLORADO

ARE SOLE AGENTS FOR THE

WILFLEY
CONCENTRATOR

and claim for it BETTER work than any Concentrator made, with a capacity of from 15 to 25 tons per day of 24 hours. It is simplicity itself. No moving belts or intricate parts. Any one can learn to operate in an hour.

For confirmation of all of the above we refer to Henry Lowe, Puzzle Mine, Breckenridge, Colo.; M. E. Smith Concentrator, Golden, Colo.; Mary Murphy Mine, St. Elmo, Colo.; W. E. Renshaw, Mayflower Mill, Idaho Springs, Colo.; H. E. Woods, Denver, Colo.; Standard Mill, Wallace, Idaho; Smuggler Mill, Aspen, Colo.; Smuggler Union Mill, Telluride, Colo.

BRECKENRIDGE, COLO., Dec. 1, 1896.

THE MINE AND SMELTER SUPPLY CO., Denver, Colo.
GENTLEMEN.—You asked us what experience we have had with the Wilfley Table, and we would state that after trying 4 Woodburys, 2 True Vanners, 1 Johnston, 1 Embry and Electrical Process; Hartz Jig and Buddies, we have found that the Wilfley Table is the only table that has given us satisfaction. We are using two tables, at a profit to our mill, where all other devices have proven a failure, and we can heartily recommend them to any intending purchasers. Yours very truly,

(Signed), R. DE BARNEUER, Supt.

We also Handle the Huson Wire Tramway.

These Tables have displaced belt tables of almost every make,
as is shown by letters in our possession.

Price = \$450.

Assayers AND
Chemists
SUPPLIES

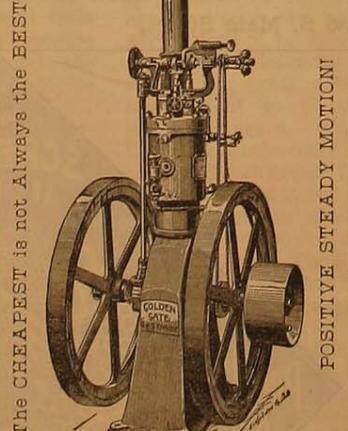
MANUFACTURERS OF

Crucibles,
Scorifiers,
Muffles,
— AND —
• FIRE BRICK •
— AGENTS FOR —
Baker & Adamson's Celebrated
Acids and Chemicals
— DEALERS IN —

Glassware,
Porcelaine
Goods, Etc.

— THE —
Standard Fire Brick Company,
Pueblo, Denver, Colo.

THE GOLDEN GATE
Gas or Gasoline Engine
Mining Hoists A Specialty



POSITIVE STEADY MOTION!

The CHEAPEST is not Always the BEST!

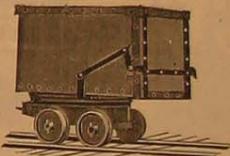
MADE BY
ADAM SCHILLING & SONS
211 213 Main St., San Francisco,
Send for Circulars and state Horse Power
Required.

THOUSANDS Now in Use Over the World

TRUAx PATENT IMPROVED

Automatic Ore Cars.

THIS ARE THE BEST
AND CHEAPEST.



TruaX M'fg Co.

DENVER, COLORADO.

The Only Exclusive Ore Car Manufacturers in America.

Send for Catalogue, or call on your dealer for TruaX Cars.

Pat. Jan. 5, '92, Aug. 27, '95.
The "Journal" Office

Is located in the Stimson Block
LOS ANGELES, CAL.

ALL THE MINING CAMPS OF UTAH AND COLORADO

ARE LOCATED ON OR REACHED BY THE

RIO GRANDE WESTERN RAILWAY



CRIPPLE CREEK
THE GREATEST GOLD
CAMP IN THE WORLD
ONLY 4
YEARS OLD
200 SHIPPING MINES
IN THE DISTRICT

THE SHORTEST, QUICKEST AND MOST DIRECT ROUTE TO
MERCUR AND CRIPPLE CREEK

W. H. SNEDAKER,
GENL. AGENT No. 14 MONTGOMERY STREET
SAN FRANCISCO

D. C. DODGE, VICE PRES. AND GENL. MANAGER
S. H. BABCOCK, TRAFFIC MANAGER
101 MARKET

F. A. WADLEIGH
GENERAL PURCHASER AGENT
SALT LAKE CITY

THE
S. S. MACHINERY CO.

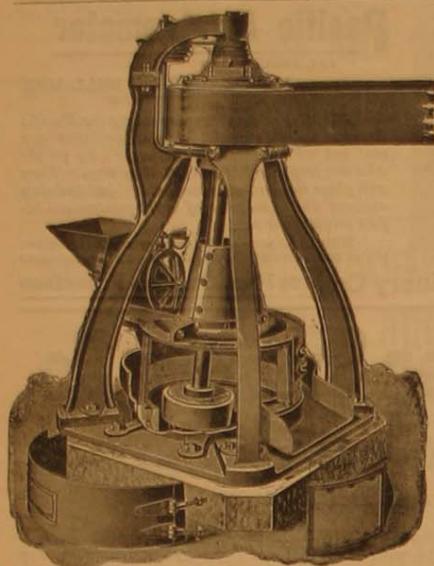
Buy, Sell and Trade in All Kinds of SECOND-HAND
Mining and Wood Working Machinery.

CORRESPONDENCE SOLICITED.

OFFICE: 1529 Lawrence
WORKS: Sixth and Market

DENVER, COLORADO

TELEPHONE | Office, 120
Works, 1234



THE GRIFFIN MILL

The only Perfect Pulverizer Working both
Wet or Dry Process

•
NO JOURNALS IN PULVERIZING CHAMBER.

•
Delivers a finished product. Will
pulverize 1 to 2 tons per hour on Port-
land Cement, Quartz or ores depend-
ing on hardness of material and firm-
ness of product.

— Manufactured and Sold by —

Bradley Pulverizer Co.,

92 STATE STREET,
Boston, Mass.

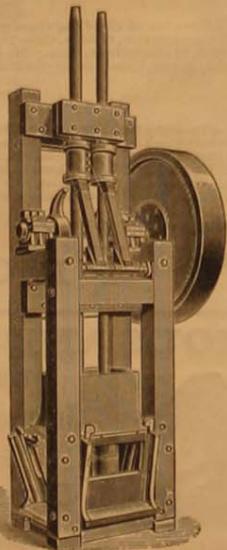
JEFFREY

Roller, Steel and Special Chains
ELEVATING AND CONVEYING MACHINERY.
FOR HANDLING MATERIAL OF ALL KINDS.
POWER TRANSMISSION MACHINERY.
COAL MINING MACHINERY.
Wire Cable Conveyors.
For long and short distance conveying.

THE JEFFREY MFG. CO.
Columbus, Ohio.

544 Equitable Bldg.
DENVER, COLO.

Send for Catalogue.

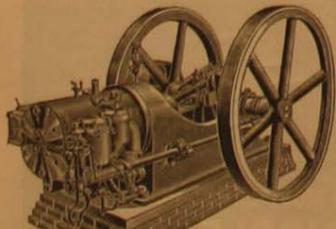
"HENDY" IMPROVED

Triple Discharge Two-Stamp
→ MILLS ←

Capacity six to ten tons per day
PRICE, \$450.00

JOSHUA HENDY MACHINE WORKS
38 to 44 Fremont St., San Francisco, Cal.

LAMBERT

Gas, Gasoline and Distillate Engines

TANKS, PIPE and WATER
SUPPLY GOODS

Agents Fulton Power Pumps

Made by A. T. Ames, of Galt, Cal.

Call on or Address,

S. J. SMITH,

230 East Fourth Street,

LOS ANGELES, CAL.

Assayers' Miners' and Chemists' Supplies



Crucibles, Muffles,
Scorifiers, Furnaces,
Cupels, &c., &c.

**C. P. CYANIDE POTASH (98-99 per cent)**

Dioxide Sodium, Zinc Shavings,
Borax Glass, Litharge,
C. P. Test Lead

AND EVERYTHING REQUIRED BY

Assayers' Miners' and Chemists'

We invite Correspondence and solicit orders.

F. W. Braun & Co.,

401 to 407 N. Main St., Los Angeles

EAGAR & CO.

Assay Office and Sampling Works.

Assaying, Mill Tests, Cyanide Tests, Etc. Special Attention to work sent by Mail.

No. 10 Stevenson Street,

San Francisco, Cal.

Chas. P. Grimwood,

Mining Engineer and Metallurgist

Laboratory, 214 Pine Street,

SAN FRANCISCO, CAL.

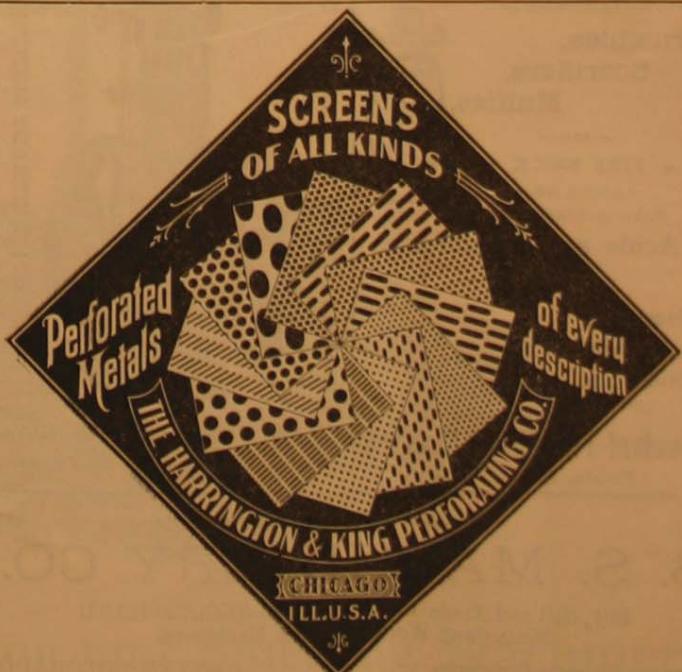
WM. H. HOEGEE

MANUFACTURER OF

Oiled Clothing, Awnings, Tents, Sails, Tarpaulins, Flags, Banners, and
Camp Furniture. Tents and Canvas Floors for Rent.
Jobber of Cotton Duck, Etc.

136 S. Main Street,

LOS ANGELES, CAL.



The Harrington & King Perforating Co.,

217 N UNION ST., CHICAGO, ILL., U. S. A. EASTERN OFFICE 204 PEARL ST., NEW YORK

**THE
Mining & Metallurgical
+ JOURNAL +**

CREATED AS THE GOLD OPIER AT LOS ANGELES, CALIFORNIA,
AS SECOND CLASS MAIL MATTER.

VOL. XVII. JULY 15 No. 8

F. W. EDELSTEN, Editor.

JOHN STEWART,
Special Contributor.

ULRICH KNOCH, Publisher

OFFICE, Stimson Block, Los Angeles, Cal.

SUBSCRIPTION PRICE:	
For United States, Mexico and Canada.....	\$2.50 per annum
" " "	1.25 six months
All other countries in the postal union.....	3.50 per annum
" " "	1.75 six months

ISSUED SEMI-MONTHLY

SPECIAL REPRESENTATIVES:
The Journal is kept on file at the following places where contracts for advertising can be made:
San Francisco, Cal.—E. C. Drake, 64 and 65 Merchants Exchange.
Salt Lake, Utah.—Art Advertising Supply Co., 60 West 2nd South Street.
Denver, Colorado—Ed. F. Eppich & Co., 47 Bank Building.
Kansas City and St. Louis, Mo.—C. M. Veney, 430 Nelson Bldg., Kansas City, Mo.
Chicago, Ill.—Newbegin & Co., Room 701 Monadnock Block.
New York City—Wm. Edelsten, Jr., 166 Broadway.
City of Mexico, Mexico—C. H. M. Agramonte, 17 Cinco De Mayo.

ADVERTISING RATES FURNISHED ON APPLICATION.

VISIT OF W. J. BRYAN TO LOS ANGELES.

Independence Day in Los Angeles was celebrated with double the usual amount of enthusiasm, eloquence, festivities, rejoicing, banquets, music, and last, but not least, noise and fireworks, both on account of the day and also the visit of Hon. William J. Bryan, the champion orator in the cause of equal and American rights in the interests of our silver and currency. To the Silver Republican Club of this city is due the thanks of the community and the friends of silver for obtaining the presence of this eloquent advocate of justice to the best interests of the southwest on this occasion.

Entering California on the north and from Reno Nevada, he made nine distinct speeches until he arrived at Fresno, on Saturday, the 3rd inst., where he was met by a local reception committee, consisting of Nathan Cole, jr., Wm. M. Johnson, for the silver Republicans, W. R. Brooke for the Democrats, and Milton Carlsen for the Populists, and escorted through the heat and dust of the San Joaquin valley to Los Angeles. As his rule is "I never talk to the public on the Sabbath day," the admiring crowd at station en route had to content themselves with an introduction and hand-shake. The train arrived here at 1.30 P. M. Sunday, and our distinguished guest, along with Nathan Cole, jr., left the train at River Station, and drove to the residence of the latter, much to the disgust of a large and enthusiastic crowd of admirers, who had congregated at the S. P. Arcade Depot, expecting to tender him a hearty welcome on arrival. The balance of the day was spent in rest and a quiet drive to Pasadena, where he was introduced to and enjoyed the beauties of home life in Southern California.

On Monday, the 5th inst., at 9 A. M., a public reception, lasting about two hours, in which some three thousand people were introduced to Mr. Bryan. Addresses of welcome by the reception committee, the labor organizations, and by Mayor M. P. Snyder, of this city. This lasted until 11 A. M., when a second reception of about 1000 people, at the Hollenbeck hotel, were introduced, under

the joint auspices of the Democratic and Populist county central committee. A third was held at the Hotel Van Nuys, where the Jeffersonian Society had arranged for a luncheon. At 2 P. M. was the largest crowd which ever congregated in and around Fiesta Park to hear the silver champion. Nathan Cole, jr., presided and Geo. S. Pattin introduced Mr. Bryan with a few appropriate remarks. After the vast crowd, of from fifteen to twenty-five thousand, had exhausted their wind and cheering energies, Mr. Bryan was permitted to be heard. He first dealt with taxation in its powers and abuse. The following are a few of his remarks in relation to silver:

"The financial influences of a country are potent in business and politics. If you have any doubt of this, run for President upon a free-coins ticket, and you will find how potent is the influence of the financial class. You offer them a bribe to drive the metals apart, and you pay them a premium for doing it, but if you give the debtor the option, you benefit society by drawing the metals nearer together with the ratio of 16 to 1, by increasing the demand and the value of silver."

"For twenty years the financiers have made the laws for the people of the United States, and have always claimed that it was for the good of the people. It is not fair that you should let some one else do good to you all the time without making some kind of a return, and, as they have said that the free coinage of silver would do them good, I say then the time has come when we should give them free coinage of silver in return for their having borne for twenty years without a murmur the burden of the gold standard.

"If gold melts you can have it coined into as many dollars as there were before, while if your silver melts, you have to hunt somebody up who wants to make spoons out of it. We have some bankers in our state who favor bimetallism, and one of them said that under the gold standard we lose more than we can gain, because of people being unable to pay their debts. The vaults of the banks are filled with bad paper—good when it was given, but bad because of falling prices.

"This is the greatest nation on earth. It is the only great nation that is sufficiently independent to throw off the shackles of money changers. We are just on the eve of the 121st anniversary of National Independence, and yet are we free? What is political independence without financial independence? I am willing to trust the destinies of this nation of 70,000,000 of people to the people themselves, but am not willing to intrust it to the people of other nations."

The speaker discussed bimetallism in all its phases from the silver side. The address was listened to throughout with closest attention. As an orator Bryan is certainly a wonder. His voice, while a trifle hoarse, reached every nook and corner of the big amphitheater. The people were apparently too much enwrapped, and they had played themselves out at the start, to be very demonstrative. At the conclusion of the address there was prolonged cheering. The speech lasted an hour and forty-six minutes.

At 8 P. M., a banquet was held at Hazard's Pavilion, under the auspices of the Los Angeles Silver Republican Club. 500 ladies and gentlemen sat down to a most festive and brilliant function. The decorations and music were both highly praised. The hero of the hour spoke in response to the toast, "Bimetallism," and led his hearers into paths and ways he did not touch in the

masterly effort of the morning. The undercurrent of thought of this speech was the necessity and good services of both gold and silver to the business community. After numerous speakers had finished, the double feast was brought to a close, and Mr. Bryan left by train for San Diego. The great success of the silver leader's visit to this section has so stimulated the energies of local and visiting silver Republicans that it is proposed to hold a State Convention in this city in September. A full delegation will come from every county in the State and plans and organization for next year's State campaign will be made.

SILVER IN THE SOUTHWEST.

The silver interest of the southwest is a matter of the highest importance in the industrial development of our own and neighboring states. On account of the large variety of ores in which silver is found in useful or commercial quantity, and because of the numerous districts in which these ores have been mined in the past, or are now being worked, or could be profitably worked, if silver mining was a protected industry, and not one which was sacrificed on the altar of free trade by our boasted protectionist governments in their love and worship of British gold. The truth of this statement is unfortunately too apparent in the abandoned mines and even whole districts in the southwestern states.

A district devastated by fire, or leveled to the ground by a cyclone or tornado, does not present a more pitiable sight than do these American silver mines and camps which have been abandoned only on account of the effect of British free trade in American silver. The silver ores which are at present being worked are not valued for the silver they contain, but are mined for the gold, copper or lead which may be combined or found along with the silver, and are therefore not strictly speaking silver ores, but the silver merely is present as a biproduct. The low price of silver about eight months ago caused the last mine in Calico district to close down. This was a silver ore worked for its silver value alone. On account of the majority of the ores of silver being those requiring smelting operations for their reduction, more labor is employed in silver mining and metallurgy than in gold mining, which ores are generally worked at the mine and require no teaming or freighting worth mentioning. The monthly product of a large gold mine, when reduced into bars, requires only a hand satchel and a light buggy to take them to the express office or bank, and that is the amount of labor required to market the output of a large gold mine, but it requires labor, teaming or freighting to market the product of a silver mine. Any one who is not acquainted with the mining, milling, smelting, chemicals, teaming, freighting by rail of silver ores will see that silver mining gives more employment than gold mining. That the industry of silver mining has been crushed out, and that all the silver which is now mined comes from ore in which it is combined with other metals, makes its metallurgy under present conditions more a matter of economy than one of profit. To a new and thinly settled country, like the south-western states, our silver policy has brought about a condition of affairs which has wrought ruin. It has prevented railway extension and settlement along new lines, injured all manufacturing and agricultural or producing indus-

tries, and depopulated many once prosperous mining camps.

The importance of silver to the labor, chemical, smelting and railway interests of the districts where it is mined makes its economic development a matter of the highest importance to the well-being of the community, so intimately are the interests of each dependent on its large production and price.

For a government to permit unfavorable trade conditions to exist, is to neglect a public trust placed in them by the people, and to cause desolation and want to reign in the place where once industry, peace and wealth were the just reward of the silver miner. Our exports and shipping trade with Asia and the Orient would greatly increase if our second most important western mineral product, which is silver, was protected from British free trade to the same extent as our iron and other manufacturing interests of the eastern states. Our Pacific Coast wheat, wine, fruit and agricultural interests are deprived of their nearest and best markets in the silver mining camps of the neighboring southwestern states.

California is not classed among the larger silver-producing states of Colorado, Michigan, Montana and Idaho, although in the year 1884 this state produced \$3,000,000, and in 1885 \$3,500,000 of silver for the years; but the output has declined year by year, until it is now about \$500,000 a year, and, as before stated, the last silver mine has closed down—the amount will still further decrease. Silver is the third most important mineral product of the state at present, and would rank second to gold if our laws permitted the honest industry of silver mining.

The lowest cost of producing silver may be estimated at fifty cents on the dollar, for when the price of silver fell to nearly that figure, the last silver mine closed down, as it would not pay at that price. The loss of the silver mines to the state has been \$1,500,000 a year since 1885, or, for the twelve years since that date to the present time, a total loss of \$18,000,000, or about equal to the total mineral output of the state for one year.

Arizona at the present time produces about \$500,000 of silver, but in 1881 and 1882 \$7,000,000 were produced in each year, and has gradually decreased each year since that time—due to decrease in price. Since 1882, the loss of the silver mines to Arizona has amounted to \$44,500,000, for the labor or cost of producing at fifty cents on the dollar.

New Mexico at present time produces about \$250,000, and the largest silver production of the state was in 1884 and 1885, with an output of \$3,000,000, but fell off since then to the present amount. The loss to this state by the suspension of silver mining has been \$16,500,000 for labor or cost of production since 1885.

Nevada's silver output has decreased from \$7,000,000 in 1888 to about \$500,000 at the present time. The loss to Nevada, through suspension of silver mining, has been \$29,250,000, for loss of labor estimated at cost of production.

Utah is the largest silver producer of the southwest, the amount at present being produced \$4,296,115. The largest production of silver was in 1891, when \$11,313,131 were mined. During the last six years this state has lost \$21,000,000, due to the falling off of silver mining. Tabulated, these losses amount to as follows:

California	lost since 1884.....	\$18,000,000
Arizona	" 1882.....	44,500,000
New Mexico	" 1885.....	16,500,000
Nevada	" 1888.....	29,250,000
Utah	" 1891.....	21,000,000

Being a total of \$129,250,000 as the loss to the southwest through the decrease and falling off of silver mining, and these figures ought to convince the most unprejudiced that the interests of labor and the industries have received a serious blow, through the suspension of silver mining in this section.

SILVER PRODUCTION AND TRADE OF THE WORLD.

The silver produced in the world in 1895 was as follows:—

North America.....	\$65,687,665
South America.....	19,839,067
Europe.....	19,028,366
Japan.....	1,154,450
Australasia.....	13,038,988

Total..... \$118,748,536

Of the European amount the United Kingdom produced only the small sum of \$165,821; but she exports yearly to the east the sum of from \$25,000,000 to \$55,000,000 a year. This shows that the Bank of England practically controls the silver trade of the world, and "fixes" the price to suit the necessities of the case. A combination by treaty of North and South American countries with Japan and Australasia would ruin this trade in silver, if these countries were to prohibit the export of silver in bar or other form, except as coin, it would cease to be a commodity of trade, and again assume its place as a standard of money along with gold. The large markets of Asia and the future possibilities of Africa for absorbing a large amount of silver fully justify such action, as even with increasing production the demand is equal to the supply, if the price was not "fixed" by the Bank of England, so as to be a gain to that corporation and to no others.

Recent Methods of Ore Treatment.

NUMBER I.

Written for the "Mining and Metallurgical Journal,"
BY F. M. ENDLICH.

Within the past decade there has been an exceptional demand for methods of ore treatment, which should combine the highest efficiency with a minimum outlay on plant as well as operation. Hitherto the vast mineral domain of the United States and Mexico had afforded to the miner so much "cream" that low metal values were essentially neglected. The collapse of silver, however, and the partial or complete extraction of many superficial ore deposits of, sometimes, phenomenal value, have forced him to either abandon operations upon low-grade ores, or to seek means of making them remunerative such as might be sufficiently cheap to leave a margin of profit.

It seems improbable that the time-honored styles of obtaining values by smelting or amalgamation with quicksilver, should be abandoned altogether for many years to come. But, meanwhile, it has been found that either auxiliary or independent processes may be advantageously employed for the purpose of separating the "precious" from the valueless. Most prominent among these are the various

forms of *leaching* (lixiviation) and *concentration*. While neither of them can be described as achievements of very recent date, yet the modifications from older methods and processes are sufficiently marked to characterize a new epoch in this class of work.

It is not the purpose of this paper to give any detailed description of what has been more recently accomplished on such lines, but rather to merely point out radical changes in and improvements upon operations previously in vogue.

LEACHING.

Most prominent among the later processes of leaching is that known as the "Cyanide Process." Since its inception, about ten years ago, comparatively small progress has been made, both as regards chemical and mechanical details until quite lately. Messrs. Chittenden and Ladd, of Washington, D. C., are now introducing a striking departure from the old mechanical methods connected with treating ores by this process. It may be well to state, right at the outset, that while, thus far, they have confined their attention to the cyanide process, yet their invention is equally applicable to all classes of lixiviation.

Whoever has been fortunate or unfortunate enough to occupy himself with leaching operations has, in most instances, found his patience sorely taxed by the difficulties attending the passage of the leaching solution, and, subsequently, of the wash-water through the pulp under treatment. Slimy ores, or those containing heavy packing gangue, etc., require special appliances to force or draw the liquid through the crushed mass, thus entailing extra expense and loss of time. Apart from these disadvantages, the exceptionally large amount of wash-water which must be used in such cases, in order to clear the pulp from the valuable solution, is a serious drawback in arid regions, and is at all times, an awkward thing to dispose of. In some instances, the slimy or clay-impregnated character of the pulp has rendered the application of leaching processes practically impossible.

It does not enter into consideration here whether the method employed for any given ore may be efficacious or not, the question dealt with by the above-named gentlemen is essentially confined to the mechanical part of the operation. They have simply reversed the usual method of procedure: instead of passing the solution through the pulp in the old-fashioned, time-robbing and cumbersome manner, they pass the ore-pulp through the solution.

A very brief description of their appliances will readily give an idea of the advantages of such departure from old-time methods. A series of suitably constructed, oblong troughs, sloping downward from each end toward the centre, are placed against each other, end for end. The first series of these troughs is charged with normal solution, the remaining ones with water. As the pulp is fed into the first trough, it is slowly taken through the solution by a set of continuous rakes, and thus gradually moved from the leaching solution into the wash-water and, when thoroughly cleared of all value, it is discharged.

It is obvious that, after a time, the wash-water will become more or less charged with the solvent chemical from the first troughs. As the solution in these latter becomes weakened, by virtue of dissolving the metals in the ores, it can be withdrawn, the partly charged wash-water is in turn brought up to standard strength, and takes its place as first

solvent. Evidently, there can be no loss of leaching solution, and the only questions remaining to be determined are those pertaining to the length of time which any given ore should remain in contact with the solution, and how long it may take to wash the tailings clean. These points are controlled either by the speed with which the pulp is passed through the solution, or by the number of troughs. To any one acquainted with leaching operations, the beneficial results derived from keeping the pulp in agitation must be patent. The entire operation is automatic, and every step thereof can be controlled to a nicety.

After the solution has done its work, no matter whether it be cyanide, sodium hyposulphite, Russell-solution, or any other, it is drawn off and the metals are precipitated therefrom, by whatever means the process or the ore may require.

This device has been tested on several thousand tons of ore before being offered to the public. At present a plant is being built in Northern California, and one or two in Arizona. Without going into details, it may be said that the time required for treating any given quantity of ore is but a fraction of that demanded by the old vat system, hence but a small plant is required to accomplish the same amount of work. The construction is simple and cheap. No skilled labor (except one chemist) is necessary to operate the plant, and the extraction of metal from the ores by this method has proved to be very high. Ores which can hardly be leached in vats, on account of their physical character, can be treated with the utmost ease, and give excellent results.

Judging from what has been accomplished thus far, it is not too much to say that, in time, the mechanical part of leaching ores will be revolutionized by the introduction of this mode of treatment, and the extraction of values will, necessarily be far more rapid as well as more complete.

CORRESPONDENCE

CALIFORNIA.

COTTONWOOD SPRINGS, July 10, '97.

EDITOR JOURNAL:—We ended our prospecting trip here, as it is getting too hot to do anything further this summer, unless you have established a camp and got to work in earnest. Prospectors have no more right to try and prospect the desert during the summer than they have the higher altitudes of Colorado, Montana and other northern districts in winter. We found a great many good prospects in the vicinity of Cottonwood, also on the north side of the Eagle Mountain range, the south side of the Virginia Dale, Pinto Mountain, and the Mount Vernon Range. All the prospectors from these several districts make Cottonwood their headquarters.

The McGrath Brothers have a gasoline arrastra here will do custom work when not running on their own ore. They had just finished 10 tons of ore, when their Moon No. 1 mine closed down and they left for the coast. The clean-up netted them about \$600. There was plenty more ore left on the dump in the mine. The ore from the Moon is nearly free milling, but the majority of the mines are base, and there seemed to be lots and lots of it. Ore ranging from \$35 upwards, nearly free from copper and no lead, and as true fissures as any one would wish to

look at. The great drawback is the want of water. If we had a Government with a soul as big as a louse (look at what Australia has done for her gold miners in the way of water) that would sink one well and demonstrate the fact that water was to be had, this field alone would in a short time give employment to thousands of citizens, and, if we must have a gold standard, would help the Government out a great deal.

Charley Converse has bonded one of his claims near the Iron Chief to a Mr. Kemble, who has started a shaft to see what there is.

Converse & Jordon have given a working bond on a mine on the south side of the Eagles, near Buzzards' Spring, to a man named Lancaster, who is sinking a 100-foot shaft.

The Iron Chief people are sinking a well near their mine, and the prospects for water are good. If they obtain water, they have a cyanide plant and crusher ready to be shipped to them. The Iron Chief is an awful good mine to own an interest in. The ore is rebellious, but as it smelts \$125, there is good money shipping to smelter.

Frank Baxter has bonded the Cactus mine to Riverside parties, who have sunk a shaft 60 feet. The mine is looking well. They will put a horse whim on this fall and go 200 feet more on the property.

Some of the greatest mines in Southern California are out here on the desert, and will some day be developed.

Yours very respectfully,
FAIR PLAY.

SONORA, CAL., JULY 7, 1897.

EDITOR JOURNAL:—The Side Hill mine lies to the east of the Clio, and from its geological and genial formation for gold, diabase dykes and black metallic slates, is almost similar to the now celebrated Jumper mine. Gold has been discovered in the slates for 700 feet to the east of the main dyke that runs the entire length of the claim. Surface cuts and several short tunnels, one 70 feet in length, have been entered, from which several thousand dollars have been extracted. There is a shaft sunk on the west side of the dyke on the east vein 80 feet in depth. A whim is in operation and the rock crushed in an arrastra and it pays well even at that depth. As its name implies, "Side Hill," backs of considerable depth can be obtained by tunneling. The mine shows a really splendid prospect and I predict that its future is assured as a big gold producer. As to ore bodies and chutes, from present indications, will be found of great extent and richness. The owner permits the parties now working to open and develop the mine for a percentage of the gold taken out. No lease is given as they work only on the will and pleasure of the owner. The mine pays well all parties concerned.

The Harriman Gold Mining Co.'s mine is now incorporated. It is situated south of Kanaka creek; the property extends to the Toulumne river, being nearly 3000 feet in length. They are sinking on a seven foot vein, the shaft being 70 feet deep. The hanging wall is of black metallic slate and the foot wall of black chloritic slate, wrongly called serpentine which is a very good contact formation. The whole vein will pay \$7 and upwards per ton. Selected rock from the foot wall of 8 inches has a value of at least \$50 per ton. This mine on development will undoubtedly prove a good paying proposition.

The Stanley and Gladstone mines are situ-

ated north of Kanaka creek and on the east belt of the mother lode. There is an immense deposit of auriferous gold bearing conglomerate of slate, diabase, quartz veins and iron stringers; the whole mass is thoroughly impregnated with gold in payable quantities. The width is variously estimated by practical miners at from 150 to 300 feet, in length over 1500, in depth from 30 to 300 feet which can be mined as a great quarry before any shafts need be sunk. There are millions of tons in sight which can be extracted at small cost ready for milling. In fact it can be mined and milled for less than a dollar per ton. A 100 stamp mill should be placed on the mine which can be kept constantly employed for years. Electric power can be derived from the Toulumne river three-fourths of a mile distant, and transmitted to the mill.

No Alaska proposition or elsewhere can eclipse this immense golden deposit. It is safe to calculate that the lowest grade ore will with ordinary mill process yield three dollars a ton in free gold. The sulphurets value runs from \$40 to \$219.10 per ton. Seven hundred tons were crushed in an old rattletrap of a mill that yielded \$2.65 per ton, taken indiscriminately from the hillside, and it was well known at the time that nearly as much was lost, the plates being in such a poor condition as to be almost useless as amalgam catchers, but even the amount saved paid. This is a phenomenal formation and should receive the attention of mining capitalists.

At the Mammoth they are drifting from the 400 foot level south in gouge matter; also drifting east of Boulder vein from Smart's Gulch. In the old Orcutt claim, now a part of this company's property, everything looks very favorable.

The Shawmut and Eagle struck exceeding rich rock last week.

The Jumper is now taking out the richest rock ever brought to grass. Only the very best is now crushed in their 20-stamp mill. All the medium grade rock is being put on one side till their crushing plant is enlarged to double its present capacity.

The Dutch mine is surpassing all the most sanguine expectations of the company. They have two distinct channels of ore bodies, each of from 15 to 20 feet in width, and high grade at that. They are just completing an addition of 10 more stamps, making now 20 in all, and only 300 feet deep. Over a million dollars has been refused for this property, which alone is sufficient evidence of its value by the owners.

The Rawhide continues as usual sending up their rich rock, keeping their 40-stamp mill continually crushing. The double chlorination plant is always in full blast.

The Rappahannock owners have opened up a station at the 600, and are preparing to start further sinking as soon as convenient. This mine shows most flattering ore.

At the Alameda mine the work of developing continues, also sinking and drifting. Very good rock is being frequently met with.

The Tarantula is being systematically developed. The ore from the shaft looks as well as usual, showing free gold in abundance.

At the Golden Star rich rock was lately intersected in their cross-cut tunnel, gold and sulphurets in profusion. The prospects of this new property are exceedingly good.

The Bell mine having shown up well, the company is making arrangements to erect an entirely new equipment. The superintendent is in the city arranging for the plant. This mine undoubtedly has a bright future.

The Marriott and Gangnier mines are being

opened up and developed with great energy. The rock shows well in free gold.

All around the section of Tuttletown we find great activity. Space in this issue will not permit of a more extended notice.

ARGUS.

NEW MEXICO.

CHLORIDE, SIERRA Co., July 9, '97.

EDITOR JOURNAL:—The Wing stamp mill continues to run on custom ores, brought in by miners from both the Apache and Black Range districts, and the weekly clean-up shows remarkable saving. New and "up-to-date" machinery has recently been added, making the plant very complete in all its details.

James Gill and Jack Spradling have taken a lease on the Long Street mine, and are getting out shipping and milling ore. They report the property as looking well.

Clark & Co., who are leasing the Rock Gold mine from Thos. Scales, at Grafton, have a large amount of \$30 ore on dump, ready for treatment at Wing mill.

J. B. Taylor and Jno. Petrie, who are developing their Ashville mine, on Dry Creek, have recently put in a whim and otherwise improved their property. They are sacking the higher grade ores for shipment, but will treat low grade at the Wing mill.

Col. Thomas Scales, the owner of a number of valuable prospects, has a force of men at work near Camp Kingsberry, and reports his properties as all looking extremely well.

Editor W. O. Thompson and Lewis Kruse have a 50-ton lot of ore at Wing mill ready for treatment, and, if results are favorable, will put a force of men at work on their Lombard Street property. This property shows at least 4000 tons of ore above ground, and is what miners call "a mine on top of the earth."

Several sales are under way, and one very extensive deal has been closed, but facts cannot be given to the public as yet.

Jno. B. Saucier has all things in readiness at his saw mill, in Chloride Creek, in anticipation of getting some heavy orders soon.

E. F. Holmes is doing assessment work on his Independence and Black Prince mines, near the silver monument.

Chas. Bishop is working on his Grafton prospect.

Joseph Oliver and E. Payne still continue to work on their properties at Roundville.

Hon. Frank A. Reynolds is expected in shortly, and good news for this section is confidently expected to accompany him.

THE JUDGE.

UTAH.

SALT LAKE CITY, July 2, 1897.

EDITOR JOURNAL:—There was considerable expansion in the volume of trading in the mining share market this week, although there is but little to be said in the way of improvement in prices. The gold stocks held steady and were in strong demand, although the supply seems plentiful. The silver stocks have struck a low limit and an upward move is certainly in order. There is not a silver security on the list the earning value of which does not warrant much higher prices.

Only limited change occurred in Ajax and business in the stock was not heavy. A great

deal of development work, from which much is expected, is going on at the mines and ore shipments are not now being specially pressed. Anchor and Alliance were featureless and unchanged as to quotations. There was some inquiry for Bullion-Beck at last week's figures. No change has been reported from the properties, which are not producing heavily. A dividend for July is not assured. Buckeye is looking well, but the stock was not active and prices were a little shaded.

Offerings of Centennial-Eureka continue to be very limited. Of sellers at present figures there are comparatively few. The mines are looking well, as has been the case for some time past, but shipments are still being curtailed. Chloride Point was not active, although there was some little inquiry at the close. The company is making light shipments of fairly high grade ore and the management still promises a mill for the properties this season. Last week's figures governed. No particular change in figures occurred in either of the Dalys. At the Daly a very rich strike is reported on the 1000 foot level, three feet of high grade ore having been opened up. It is likely that the company will resume mill operations soon, although a further wait may occur should silver fail to advance. Dexter was practically unchanged, and business in the stock was not heavy. From the properties very flattering reports have been received, but these reports have not occasioned any further advance in the stock. Dalton was fairly active at slightly shaded quotations. Dalton & Lark was in somewhat better demand, and there is a possibility of considerable of the cheap stock being taken up.

Eagle did considerable business at somewhat better prices, regardless of the fact that operations at the properties have not yet been resumed. There were absolutely no buyers in for East Golden Gate. Four Aces was active in but a limited way and prices were somewhat lower. On June 30th Geyser-Marion paid its third dividend of three cents per share. The company has decided to resume operations at the Marion mill, which is estimated to mean a net earning to the company of \$3000 a month additional. The properties are looking extremely well. A great deal of activity was displayed in the stock, although quotations were not changed materially. Galena did little and quotations remained about unchanged. Horn Silver is making an immense production. The stock is not active on this market, although in the east the demand continued strong. Lucky Bill's last assessment has been very generally paid and the list of delinquents is short.

While the business done in Mercur was hardly as heavy as usual, quotations were well maintained. Offerings of the stock being extremely light. The official reports from the properties are of a highly encouraging nature, and show that the properties are in better shape than ever before in their history. The mill is doing splendid work with its increased capacity. Mammoth displayed some activity, although prices changed but little. The anticipated resumption of mill operations has not yet occurred, but is promised for the 5th. On the regular date Ontario paid its usual dividend of 10 cents per share. The stock was in somewhat better demand, with only limited offerings at present quotations. A rich strike is reported to have occurred in the Ontario, and the company was on the market with a heavy shipment of over 300-ounce silver-lead ore. The price on Omaha did not change materially and no special ad-

vance is looked for until all legal difficulties surrounding the control of the property are adjusted.

After the Sunbeam's annual meeting next week, operations at the properties are to be resumed and a strong advance is anticipated. The annual meeting will result in a thorough reorganization. Both of the Swanseas did considerable business at last week's figures. The Swansea will pay its usual dividend on the 5th. Utah did some fine business, but the demand was not heavy, prices remaining unchanged. Very truly yours,

JAMES A. POLLOCK.

Miscellaneous Mining News.

ARIZONA.

New Strike at Pearce.

A new strike in an extension of the famous Commonwealth mine at Pearce is one of the mining sensations of the week.

The owners of the mine are so elated they are afraid to disclose the real value of the ore discovered until they have made further explorations. The ore body was struck upon reaching the foot-wall of the vein, and is of the same appearance and apparent quality as that found in the great bullion producer of the camp.

Every indication points to its being a continuation of the same ore body and on the same vein which gave the camp its fame and has proven such a wonderful producer.

Kingman Notes.

Conkey & Tyler made a shipment of ore from the Lady Bug mine at Mineral Park, this week.

Fred Harter, who has been leasing on the Lone Star mine, made a shipment of rich ore to the sampler a few days ago.

J. H. Sample, James Keating, John Mayfield and Al. Anderson have leased a portion of the Nighthawk mine and have already begun to work on it.

The Oneida mine is showing up quite well since the new lessors began work on it. The drift in the bottom of the shaft is being pushed ahead in good ore.

The openings recently made in the Nighthawk mine show nice bodies of the richest of ruby ore. In one place eight inches of ore that will run over eighteen hundred ounces in silver is exposed.

Walter Burkhart last week brought in a lot of ore from the Retort mine, Mineral Park, and had it worked at the Arizona Sampling Works. Burkhart, jr., was also in with a shipment from the Buckeye mine.

Work on the Eureka mine is progressing favorably, and the big ore body still continues in evidence. At the Union mine, the fifty-foot contract on the main shaft is almost completed. The ore body is showing up splendidly.

M. D. Lattin and George Defrance are in Kingman, from their placer mines in the Chemehuevis mountains. They brought in with them considerable gold dust and several big nuggets. They average about five dollars each per day with one machine.

It is understood that the Cedar Valley Mining and Milling Company is soon to put in a big plant at Cedar to work the ores from several lodes. The capacity of the present mill

is too limited for the output of the mines. This company has two large ledges in the Arnold ground that are sure to become record breakers.—*Mohave Miner.*

Miles W. Gibbons, a mining man who is operating at Globe, Ariz., has closed a contract for about \$15,000 worth of machinery with a Denver firm. He purchased a ten-stamp mill and hoisting works for one of his properties, which will be shipped to the camp as soon as possible.

"Globe will be a good camp when it has a railroad," said Mr. Gibbons. "The Gila Valley and Globe Railroad reached Geronimo, about sixty-eight miles from Globe, when work was stopped on account of trouble crossing the Apache Reservation, but I understood that matters have been adjusted and the construction will be resumed soon. The line should be in Globe by the first of the year. This will give the camp a chance to grow and it will be heard from shortly after the railroad is completed."

The Copper Queen Co., one year ago, was carrying 600 men on its pay roll; it is now carrying 1200. This is a pointer as to increased copper production.

Probably the largest body of ore in Mohave county is to be seen in the Minnesota mine, where a sixteen foot breast of ore is exposed and no walls in sight. The ore will all pay on a mill.

A ton of ore from the Chemehuevis mountain mine of Raul, Marines & Ellibee, in Mohave county, was sold to the sampler, at Kingman, that gave a return of twenty ounces in gold. The boys have a big ledge of lower grade ore from which assorted shipments are made, sufficient to keep them in supplies while developing the property. They have a splendid showing.

Geo. Rohpeter reports a rich strike at the bottom of the 95-foot shaft in the Swindler mine, where a vein of gold ore 14 feet wide is exposed, which is said to carry \$40 per ton gold. The ore has sampled as high as \$91. The mine is in Big Bug district, near Chaparral gulch.

The Gladiator mill, running on ore from the Gladiator mine, is turning out \$117 an hour, for eight hours a day, the present water supply not admitting of a longer run than eight hours in the twenty-four. The operators of the property are negotiating for Dickey Springs, half a mile distant from the mine, from which a permanent water supply can be obtained and piped to the mine. Superintendent Foltz is working about 26 men on the Gladiator.

Julius Morrow and partners have leased the Indiana mine from Dougherty & Smith. The Indiana is located west of Prescott, in the neighborhood of the Last Chance, and has a fine, large ore body exposed.

It is stated that the Lynx Creek hydraulics have temporarily shut down, pending the putting in of heavier machinery.—*Prescott Courier.*

Cochise Petroleum.

For several months the *Prospector* has spoken from time to time about the presence in the San Pedro Valley of petroleum. Later developments give more and stronger evidence of the existence of this valuable mineral oil in large quantities.

The first discovery was made while boring for artesian water; and upon finding unmistakable signs of oil, a sample was secured and submitted to the mineralogical professor of the territory at Tucson. The result of his analysis showed the product to be a valuable quality of petroleum.

Since that time no amount of prospecting has been done other than a few comparatively shallow wells for artesian water.

By the latest improved methods employed in boring for oil in Pennsylvania and West Virginia, the cost of boring a thousand foot well is, under ordinary circumstances, about two thousand to twenty-five hundred dollars.

In view of the great benefit that it would secure to the individuals, as well as to the county at large, it is a matter of wonder that a few enterprising men have not taken hold of the idea of developing one of the many great resources of wealth in that county.

CALIFORNIA.

AMADOR COUNTY.

The crosscut from the shaft at the 400-foot level in the Pocohontas mine at Drytown is progressing favorably. A ledge has been encountered which shows a splendid class of ore, at a much shorter distance from the shaft than was anticipated.

A small blaze occurred in the Wildman mine at Sutter Creek, last week, caused by a candle setting fire to a timber at the 1100-level. It was discovered immediately and extinguished without loss and without endangering the lives of anyone.

The Bay State Mining and Developing Co., at Plymouth is taking proceedings in insolvency. They are now over head and heels in debt after having spent \$185,000 in sinking a shaft about 600 feet and putting up a ten-stamp mill.

The recent operators of the Bellwether Gold Mining Co., of Jackson, turned that property over to S. W. Bright, the original owner, on the first, they having violated their agreement to prosecute work continuously. This is a good change and let it be hoped by every citizen of this county that never again one of our properties will fall into the hands of such miners and mine operators as those composing the Bellwether Gold Mining Co.

Messrs. Hatch and Marshall, who for many years have held the Marklee mine near Volcano in idleness have sold the property to a company of mining men, among whom are Senator Tom Flint of San Juan, Homer Wilson and Geo. Root. They have purchased a six-foot Huntington mill, concentrators, boiler and engine and intend to establish the plant and get to work without loss of time. The deal with Hatch and Marshal was made by James R. Smith of Pine Grove. The change of ownership in this mine will probably be the means of reopening this once valuable producer, and greatly benefitting the mining interests of the eastern section of our county.—*Amador Ledger.*

CALAVARAS COUNTY.

Calaveras Notes.

The Swenson or Orchard gravel mine, west of town, is about to be rehabilitated. Preparations are being made to commence work, and machinery will be on the ground in a few days.

John Swank is driving a new tunnel on the Alpine mine and is already in about 50 feet. This tunnel is started from the bed of a ravine about 50 feet below the old workings. The vein is two and a half feet wide, carrying sulphurates of iron, zinc and lead.

A force of men were sent out from the city of Calaveras the last of June to begin work on the new five-stamp mill to be erected on the McPherson mine at Old Gulch. The property was recently bonded by J. Evans to G. W. Dyer and other parties from San Francisco.

The Western Gold Mining Company have been making rapid progress sinking on the Seifert mine near the Kentucky House, and the windless process will be replaced by a steam hoist as soon as the machinery, which is already upon the ground, can be placed in position.

The Esperanza (Boston) mine, located two miles from Mokelumne Hill, is the most promising development in that locality at present. A depth of 580 feet has been attained in the shaft and the richness of the ore increases with the depth.

A deal was consummated the last week in June whereby the Greek mine, which is situated near the Banner saw mills, was bonded to Allan J. Smith for the sum of \$7000. One thousand dollars of this sum was paid down and the remainder is to be paid in payments of \$1000, the final payment to be made on December 1st, when a deed of the property now in escrow, will be delivered to the purchaser.

KERN COUNTY.

[Special Correspondence of the *Mining News*.]

GARLOCK, (CAL.), July 7th. — The mills, which shut down on the Fourth, are again in active operation, grinding out rock. The boys celebrated at Randsburg on the 3rd and at Garlock on the 5th, and in consequence it required a couple of days to recover from the effects of their exertions at the two places. Now everything is again serene, and the music of the stamps is heard from "early morn till dewy eve."

The Henry mill did not shut down. It has been running steadily for some time on rock from different mines. At present it is working on ore from the Rand, which is turning out well.

Twelve men are working on the Minehaha, sinking a shaft and driving a tunnel, and it will be one of the big producers of the camp.

The Visalia Mining and Milling Company has just made a contract with the Val Verde for milling a large number of tons of rock. A test run was recently made on rock from this mine which gave such satisfactory results that it was at once decided to get out a large quantity of ore.

The McKearnon mill has a contract with the Webb & Harney mine to run on ore from this mine for an indefinite period. The ore will average about \$15 per ton, and one miner can get out more rock than two men can sack.

A new road has been built on the mountain and work is progressing on a road across the desert. When this is completed there will be no limit to the amount of rock that can be furnished.

Dr. B. O. Webb is up from Los Angeles, and is associated with Mr. Harney, of the same place, in working the mine. As the ore is easily mined, and the ledge is about twenty feet wide, it will undoubtedly prove a big bonanza to its owners.

The Garlock mill started up again this morning with a big supply of Rand ore on hand, and will run night and day until Sunday morning when the usual weekly cleanup will be made. This mill is in first class condition and has been running day and night for the past two months, mostly on Rand rock, sandwiching in an occasional run for one of the small mines.

The Kelly mill is making a run of thirty tons of ore for the Meteor, to test the rock. This mine is the property of Mrs. F. A. Carpenter, John W. Kelley and Steve Price, who have let a contract to Messrs. Wilson & Campbell to run a tunnel seventy feet. It is rock from the tunnel which will be tested. The rock shows fine, and it is confidently predicted that it will go better than \$30 to the ton.

The Smith & Maxon mill is undergoing repairs just now, but will be running, as soon as these are completed, on Rand ore.

The cyanide plant has been in constant operation since its erection, on tailings from the different mills, with very satisfactory results to all concerned.

The most encouraging reports continue to be received from the Radamacher, El Paso, Black Mountain, Summit and other districts, and many good prospects are in process of development.

A section of country just south of Garlock, across the valley, heretofore neglected, is now receiving much attention and bids fair to develop into a rich district.

Garlock, owing to its plentiful supply of water, will necessarily be the milling and trading center, for many years, of a large section of country, extending in every direction, in addition to which there is a reasonable probability that many good paying mines will be opened up immediately adjoining the town.

C. C. Lane, superintendent of the Rand Mining Company, reports that for the month of May the mine product of ore was 113 tons, 370 pounds, which milled gave \$5,170.70. The total mine expenses was \$2820.22. Month's profit, \$2350.48.

For the month of June, the ore milled was 365 tons, 1536 pounds. Bullion produced 923 ounces, estimated value \$13,841.44. Total expenses of mining, milling, etc., \$5926.51. Net profit for June, \$7914.93.

The work of sinking the Wedge shaft goes merrily on, and a depth of 335 feet has been reached, with the ledge looking just as good as ever and just as rich.

Considerable excitement has resulted from the discovery of good placer ground on the flat between here and Goler. Bush, Mitchell & Ward have been dry washing for some time near the road leading from Johannesburg to Garlock. George Taylor recently joined the party, and they went down through a gravel cement some distance, when they struck a fine body of auriferous gravel, some four feet in depth, resting on bed rock. They were making very good pay all the way down, but when they struck bed rock they found it much better, and one day last week they took out five ounces of nice coarse gold. The news of their good luck spread rapidly, and it was but a few days until the supposed channel was staked off several miles in length. As yet no other holes have reached bed rock, but in most places the ground prospects from the surface and there can be no doubt about

the value of the placer fields, the extent of which are yet unknown. There is every reason to believe it to be a continuation of the famous Goler channel, from which thousands have been taken in the past few years. The gravel on bed rock is identical with that of Goler and in many instances the surface indications are the same. It is right in line for a continuation of the channel, and all concede it to be such. So far as explorations have demonstrated, the new district is from five to seven miles long and from one to two miles wide. But since fairly good surface prospects are obtained over a much larger area, it is possible that the new placers may be more extensive than is now supposed.

Many prospectors are at work sinking shafts, and it is possible that bed rock will be reached in a number of places by the time this paper reaches the reader. At discovery bed rock was reached at a little more than twenty feet, but of course this cannot be taken as an indication of what the average depth will be.

At a point about two miles west of discovery, a prospect was obtained on the surface which showed better than a dollar to the pan, and if there is much of that kind of ground it means good digging for many moons.

The opening up of this new placer field means much to Randsburg, as it will in a very short time put the money in circulation so greatly needed. Enough is already known of the richness of the ground to insure better times, for good wages can be made with the dry washer all over the placer field, from the surface of the ground, and many holes will be sunk that will pay to bed rock where the best is to be found.—*Randsburg Miner.*

PLUMAS COUNTY.

Quincy Notes.

Recent developments in the Plumas Imperial hydraulic mine prove the theory upon which its owner, Mr. Hazzard, based the development work prosecuted by him during the past two years. These developments also justify the faith in the richness of the mine entertained by Mr. Hazzard—a faith毫不怀疑地 backed by his money.

Mr. Hazzard informs us that, as work progresses, the new quality of gravel which was recently encountered bears evidence of opening out and filling the wide channel whose mouth was filled by the "country rock" which had broken and slid into it.

There is scarcely a doubt that the Plumas Imperial is developing into one of the largest and richest hydraulic mines in Plumas county. The gold is dark and rusty in appearance—the kind which is expected to come from an ancient channel like this. This permanent channel was found to be entirely different in the character of the gravel from that previously mined, as well as in the nature of the bedrock. The gravel is well washed, contains much iron ore, and readily yields to the force of the stream from the "giant." The bed rock is of a soft, talcose nature, easily cut down with the pick and shovel.

G. P. Cornell has made arrangements whereby he will start work on the Arcadian mine, owned mainly by D. McIntyre of Greenville. The property is on the side of North Canyon opposite the Standard & McGill mine. During the past two years, more or less development work has been done on the property by Mr. McIntyre, resulting in developing a ledge of gold-bearing quartz of fair size and grade. It is on a line with the

Green Mountain group, of which it is part. On the opposite side of North Canyon rich ore has been found in the Standard & McGill.

From D. W. McKenzie we learn that a very important development has been made in the Phoenix mine at the head of North Canyon, near Greenville, owned by Sam Firmstone and John Richards. A six foot ledge of rich milling ore has been opened up and the prospects are very bright. The ore, it is claimed, will mill ten dollars per ton—a low estimate. These men have worked hard for many years and under adverse circumstances, having up to the present run about 1000 feet of tunnel. They have merited the utmost success.—*National Bulletin.*

RIVERSIDE COUNTY.

It is reported that Hart & Sons have taken a \$3,000 gold brick out of their cyanide plant from tailings of the old Virginia Dale mine, about four miles from Dale City.

SAN DIEGO COUNTY.

One of the greatest mines in California is located in the southeastern part of San Diego county. The fact that the Golden Cross mine, at Hedges, cleaned-up in the last week in June and the first in July about \$9,000 per week, a total of \$18,000 for the two weeks, running only 50 stamps of their 140 stamp mill will prove this assertion.

COLORADO.

(Extracts from Mining Investor.)

EL PASO COUNTY.

Cripple Creek Notes.

Returns were received during the past week for a shipment from the Lillie claim, up Poverty gulch, and belonging to the Franklin-Roby Company. It was a 20 ton lot and the check for it showed it to have a value of \$2,753.

During the past week 62 tons of medium grade smelting ore was sent out from the Moon-Anchor. It is expected that 50 tons of high grade stuff will be forwarded to the sampler in a few days.

The new 40 horse-power boiler for the main working shaft on the Gold Dollar was delivered on the ground recently. The work of sinking the shaft to connect with the tunnel will now be pushed.

The Birch lease on the Mary McKinnie sent out a car of ore estimated at \$30 per ton. This was taken from the two old shafts. The new working shaft has not yet reached the ore chute. Drifting for it is in progress from the 120-foot level, and the lessee expects to break into it in a few days.

A contract was let last week for another 800 feet of work on the Cripple Creek and Gold Hill tunnel No. 1. The work was awarded to Mr. Davis, who has already done some 1,200 feet of work on this tunnel. This contract will bring the breast of the tunnel to a point 3,000 feet from the mouth.

The Gilmore lease on the Morning Glory has just come into the ore in the drift from the 150-foot level. The pay streak is six inches in width and assays from \$18 to \$60 per ton. Shipments were formerly made from the 100-foot level, but the vein pinched out. Greater depth has given the lessees values again.

LAKE COUNTY.

Leadville Notes.

The Virginia shaft, on Little Ellen hill, is sinking to catch the ore body which dipped away from the upper workings.

The Pittsburg No. 6 shaft on Fryer hill has recently been leased to J. R. Amburn, George B. Handy, John Riley and Pete Anderson. They are shipping 25 tons of iron a day.

The No. 2 Gallagher shaft of the Mikado Company has just been completed to a depth of 1200 feet. There are large bodies of sulphide at this depth. The successful lessee on the Mikado is A. Dyatt.

The Yak tunnel is making about ten feet per day with three shifts. A most important strike was made in the interior shaft some days ago. The ore carries 54 ounces in silver and some gold.

CLEAR CREEK COUNTY.

Empire Notes.

Aldrich & Hall have shipped 21 tons of high grade ore from their Gold Bug tunnel this week.

The Conqueror mill at North Empire is finished. This mill will treat only ore from the Conqueror mine, as there is an unlimited quantity of good milling ore in this mine.

The Little Chief Gold Mining Company struck eight inches of ore in the Little Chief mine which runs three ounces gold per ton and 2,000 ounces silver.

The new machinery arrived here last week for the Atlantic shaft. The owners will begin sinking the shaft from its present depth (250 feet) to 500 feet. They have a fine body of rich ore in the shaft.

Gergetown Notes.

The Centennial mine is producing two-ounce gold ore right along, and there is a big body of it.

The value of the ore now being taken out of the Griffith mine is two and one-half ounces in gold to the ton and 15 per cent copper, and there is a large body of this ore in sight.

B. B. Lawrence, of Denver, the general manager of the Pelican Dives group of mines, situated on Republican Mountain, has the sale of the property under consideration to a Washington party. This property has produced from \$3,000,000 to \$4,000,000, and should the sale be consummated it will command a good price.

PITKIN COUNTY.

Aspen Notes.

The Lessees, who a few weeks ago made a big strike of metallic ore on the Mollie Gibson, are still working in shale which is said to run very high—as much as 500 ounces silver to the ton. It is stated that they have taken out over \$150,000 since the strike was made, with prospects of the continuation of the good ore.

Messrs. Copeley, Findley and Rose, who a few days ago made a strike of high grade ore in the Alta-Argent at a depth of 1300 feet, are still working with encouraging results. The ore they found is spar and lime, and runs about 100 ounces silver to the ton. As this strike was made at a depth of 1300 feet, it encourages the belief that deep mining in Aspen district can be operated at a profit.

This strike, taken in connection with the ore in the Free Silver drift in the Smuggler ground, is very significant. The ore in the Smuggler is not of such a high grade as that in the Alta-Argent, but is pay ore, and it is believed that the grade will become better with development.

SAN MIGUEL COUNTY.

Telluride Notes.

Russell & Martin, blacksmiths of Telluride, have lately made a good strike in Cornet Creek basin. Their lead carries two feet of mineral that runs \$60 per ton in gold and is free milling to a large degree.

O'Donnell & Jackson, owners of the Pride of the West, located in Bridal Veil basin, near Bridal Veil falls, have recently erected a 5-stamp mill in close proximity to the property, and for two or three weeks past have been treating the mineral taken out while developing it, which has been yielding on an average of \$60 per ton. The lead carries from three to four feet of quartz, similar to that being treated, and the owners believe that they possess one of the coming great mines of the camp.

SUMMIT COUNTY.

Breckenridge Notes.

McKay Brothers are taking out some fine galena ore in a stope from the Laurium tunnel, where they have a lease.

A new incline shaft will be sunk on the vein by the Laurium Mining and Milling Company, the new whim and part of the machinery being on the ground.

Good progress is being made by the contractor in building the new mill for the Hamilton Mining and Milling Company. The old mill has pounded out lots of gold and has earned a rest.

The placer mining output this season promises to exceed that of last year. The abundant supply of water practically insures a "good crop" of nuggets and fine gold from the placers. All the large placers are working their crews, and nearly every small placer where work can be done with sluices has several men at work.

LOWER CALIFORNIA.

The eastern parties who have bought the sulphur mines at the head of the Gulf of California, in Lower California, expect to ship 5000 tons a month as soon as they get to work, which will be in the near future.

MEXICO.

John S. Thomson of Lacon, Ill., writes from the City of Mexio that he has purchased a controlling interest in the historical Jesus Maria mine for \$50,000 in gold. The mine is located in the state of Chihuahua. It is known that it was discovered and worked hundreds of years ago by the Aztecs. They were driven off and made slaves of by the Spaniards, who worked the mine in a primitive manner till they were in turn slaughtered by Indians. The mine was then abandoned and its existence was not thought of for a long period of time. Four years ago Milliken, a prospector out from the City of Mexio, stumbled on the ancient workings and made the discovery that they were immensely valuable. The property at this time was owned by an old Mexican, who sur-

rendered the Jesus Maria to Milliken for \$8000.

Thomas M. Shepherd has been making a record for himself directing the workings of the great Porfirio tunnel in Batopilas for the past nine months, brought the conducta of silver in from that point this week. The value of this month's conducta, including the merchants, was about \$60,000.—*Chihuahua Enterprise*.

Samples of green ore taken from the Devine mine, No. 1, located in the Comobabi district of Sonora, and owned by Frank Morgan, assayed 372 ounces in silver; that taken from No. 2, blue ore, will go 215 ounces, second class green ore, 152 ounces. Talc, which is in great abundance, from four different dumps, assayed 80, 43, 27 and 21 ounces respectively. Two samples of blue ore, taken from a tunnel in the south drift assayed 58½ and 71½ ounces. These mines are well known throughout the country, and old miners say there is no doubt as to there being plenty of good paying ore upon which to work, and that there are no signs of its ever giving out.

It is now authoritatively stated that a deal has been consummated by which the famous copper mines of Nacozari, Sonora, have been transferred by the Guggenheims of Monterey, to a new syndicate of Americans, composed in part of the firm of Phelps, Dodge & Co., of New York, who are the owners of the Copper Queen Consolidated mines of Bisbee.

NEW MEXICO.

Hillsboro Mines and Mills.

Output of Hillsboro gold mines for the week ending Thursday, July 1st, 1897, as reported for *The Advocate*:

	Tons
Wicks	50
Butler	10
Richmond	55
Happy Jack	15
Snake Group	60
Opportunity	10
Sherman	15
Prosper	5
Eighty-five	5
Rex (silver-lead)	15
Total	240

Total output since Jan. 1, 1897.—3,350.

The Wicks mine continues to make a phenomenal output of high grade smelting ore.

J. M. Webster is pushing the crosscut tunnel work on his Trujillo Creek gold and silver property.

D. Stitzell is continuing work on the main Sherman level and is getting out a carload of \$120 ore.

McPherson & Co. have several men steadily employed on the Mountain King mine.

The average value of the ore shipped from the Snake property during the past six months shows a considerable increase over the preceding half year. As all the workings are now at greater depth this is a very good showing and one that will warrant deeper exploration.

Foreman Hirsch is maintaining the large production of milling ore from the Richmond mine. A cross-cut to the east from the tun-

nel level has opened up another large body of ore and the output is likely to be very much increased in July.

A good strike of ore is reported this week from the Eighty-Five shaft cross-cut. The shaft is over 400 feet deep and very little further development in drifting will make this ore available at low cost of extraction. The Milwaukee and Hillsboro Mining Co. has expended a considerable sum of money in this mine, and will now be encouraged to further exploration of their other valuable and promising properties.

The Old Abe Company at White Oaks is now arranging to resume work on the new shaft which will be pushed to completion to the 800 foot level as rapidly as possible.

Bland Notes.

Charles Paxton will resume work on the Ellen L., the main lead of which is five feet in width the full 1,500 feet in length of the claim, and from which several high assays of gold have been obtained.

Harry Woods, one of the fortunate owners of the Producer in Peralta canyon, came over from there during the week. He is pushing development on the valuable property and expects to make of it one of the leading shippers of the district.

Messrs. Mauney & Allen are pushing development work on the Ironclad in Medio Dia canyon, and have been joined by W. H. Buyon, of Pueblo, Colorado. They are now in 200 feet in the crosscut tunnel, and expect to cut the lead in a short time.

Henry Bletcher and Patrick Hartney have completed the assessment work on the Aspinwall, the valuable Colla canyon property belonging to Phil. Barber, and they have left it in a condition where it is expected that a very little work would be required to open up one of the richest and largest leads in the district.—*Herald Weekly*.

The Cerrillos Smelter.

Captain Marion Balue, general manager of the Mary Mining and Smelting Company, began work at the smelter June 29. The plant will be located just west of the Santa Fe tracks in that town, upon 12 acres of land, which will be graded and tracked as fast as the work can be done. The land will require but little grading to place it in shape for the tracks and buildings. Water will be piped from a spring about a mile north of town, which will furnish water for all requirements of the smelter. The smelting plant will consist of two 65 ton stacks, so arranged that additions thereto may be made at any time.

The Mary Mining and Smelting Company own the Mary mine and five other claims near Kelly, in Socorro county, and will ship the ores from these mines for fluxing purposes, securing dry ores from Golden, San Pedro and the Cochiti district.

The company has plenty of capital for the carrying out of its plans, and the day is not far off when Cerrillos will be a busy place, the headquarters for mining men, and the center of a prosperous mining district.

Captain Balue will have miners at work, locating the pipe line from the springs to the smelter grounds, and surveying tracks and switches on the smelter ground on next Tuesday. A sufficient supply of ores is promised from the Cochiti district at once, and Captain Balue is of the opinion that within 70 days or by the 5th of September next, he will have the plant and smelter in active operation.

The officers of the company now are: H. C. Wisner, president; A. F. Stephens, vice-president; M. Balue, general manager; J. H. Vaughn, treasurer; Dr. D. W. Manley, secretary.

NEVADA.

The Raycraft brothers have ceased operations at the Buckeye mines, owing to the failure of the water supply. They say the mines paid this season more than ever before.

Al Boles and Jack McKnight of Red Canyon have a tunnel in 300 feet on an extension of the Warhorse mine and hope to open up a bonanza in a few days.

The Dexter mine at Tuscarora has 125 men on its payroll at \$3 a day and is reported to have made a big strike in the bottom of the working shaft. The ledge was cut as expected and several hundred sacks of rich ore taken out in the excavating necessary for the shaft.

The new mill at the Austin mining company's mine at Austin was started up Monday of this week on an experimental run. The equipment of the plant embraces thirty stamps and a number of Frue Vanners and is up to date in every respect. The works are lighted by electricity and the town of Austin will also be illuminated by the same dynamo.

T. A. Bennett while in Gold Creek made S. P. Carlson an offer of \$20,000 cash for his mine in the Mardis district. Mr. Carlson held out for \$50,000 and the deal was off.

Four miles east of Gold Creek by the cyclometer one reaches the divide between the waters of the Bruneau and Owyhee rivers, probably 1,500 feet above the town. From this point one looks across the Bruneau river sees the three Carlson dumps on Copper mountain.

The Mardis district occupies relatively about the same position to Gold Creek on the east that Tennessee gulch does in the north, each distant about ten miles to be tributary to one central point.

The Carlson property is probably the best developed claim in the Mardis district. The principal work is a tunnel in 135 feet. From this cross cuts have been run showing up a ledge 30 feet wide. An average sample of this entire 30 feet of ore gave \$2.40 in gold. Mr. Carlson thinks that he has 50,000 tons of free milling rock that will average five dollars. Mr. Bennett thought 10,000 tons was a conservative estimate.

The entire development work on the property is about 250 feet. All agree that it has the promise of a great mine and the only difference is as to how much that promise is worth.—*News*.

Articles of incorporation of the Old Virginia Mining, Milling and Power Company have been filed by C. T. Ryland, jr., Gaston Strauss, Dr. W. F. Drake, John G. Hopper, C. A. Stubbs, J. E. Gabriel and H. Harvey, with the County Recorder of Toulumne county, with a capital stock of \$200,000.

On the Alaska-Treadwell mines, in Douglas Island, Alaska, a shaft 8x12 will be sunk to a depth of 1000 feet. Very little is known as to the depth of the pay in these mines, and the results of this sinking will be looked for with interest.

GENERAL NEWS.

Recent Mining Patents.

Messrs. Townsend Bros., Solicitors of Patents, 9 Downey Block, Los Angeles, California, report the following list of recent mining patents of interest to mining men.

June 29. No. 585,190. Crushing Machine. M. J. Eichhorn, Chicago, Ill. Assignor to F. C. Austin, same place. This is a rock crusher having two sets of crushing jaws, one arranged above the other, and both operated by the same lever, but from opposite sides of the fulcrum thereof.

June 29. No. 585,191. Crushing Machine. M. J. Eichhorn, and M. G. Bunnell, Chicago, Ill. Assignors to F. C. Austin, same place. The invention consists in arranging the jaws so that the movement is bodily forward and backward instead of swinging upon a pivot in the ordinary manner.

June 29. No. 585,295. Chlorination Process of Obtaining Gold from Ores. J. J. Storer, New York, F. Martin, Townsend, Montana, and G. O. Eaton, New York. Gold ores crushed to an exceedingly fine powder is floated in separate independent particles on a current of air through a hot furnace to oxidize the base elements; the hot non-volatile particles are precipitated continuously without aggregation into a bath containing free chlorine and is continuously agitated; after which the liquid is conducted through suitable precipitating tanks.

June 29. No. 585,297. Blast Furnace. R. H. Terhune, Salt Lake City, Utah. The invention consists in feeding the material into the furnace over gratings which project into the furnace so that the finer material is deposited near the wall of the furnace and the coarser material at the center thereof.

June 29. No. 585,304. Lime Kiln, Cupola and Metallurgical Furnace. E. J. Bird, Big Stone Gap, Virginia. In a furnace, a plurality of safety devices disposed at different planes of elevation and communicating with the interior of the furnace, each device comprising two valves one of which is adapted to be opened before the other by gas pressure within the furnace.

June 29. No. 585,268. Ore Roasting Furnace. A. Heimbach, Butte, Montana. An annular chamber is provided with feed and discharge openings and a pair of gravitating doors extending transversely across said chamber between said openings, one of the doors being arranged to close before the other is opened.

June 29. No. 585,552. Ore Separator. W. R. Bushby, Pueblo, Colorado. A centrifugal receptacle or bowl of inverted conical construction is provided with a plurality of conveyors of having a common mouth arranged contiguous to the wall of the receptacle and provided with a plurality of scrapers corresponding in number with the conveyors, whereby each conveyor receives a layer of ore of predetermined specific gravity.

June 29. No. 585,492. Method of and Apparatus for Separating Precious Metals from their Solvent Solutions. J. F. Webb, St. Louis, Mo. The solution is first passed downwardly through a body of carbon, then upwardly through a body of zinc, and again downward through a body of carbon; an electrical circuit completes the connection between the carbon and the zinc.

June 29. No. 585,522. Process of Making Tin Oxid. H. Jager, Kalk, Germany. Assignor to Wassermann and Jager, same place. The metallic tin is raised to approximately

twelve hundred degrees centigrade in the absence of air, and while at the high temperature an abundance of air is admitted and the tin-oxid formed is removed.

July 6. No. 585,812. Amalgamator and Concentrator. F. G. Barlow-Massicks, Massicks, Arizona. Riffle plates are arranged at opposite inclinations, troughs at the ends of the riffle plates, to which the troughs are connected, and suspending devices by which the apparatus is hung to maintain the troughs in a level position.

July 6. No. 585,989. Gold Washing Pan. F. Slectchler, San Francisco, Cal. Assignor of one-half to August and Henry Dannebrink, Gilta, Cal. The pan is provided with an inwardly projecting rib and crescent shaped indentations of curved form lessening in depth near the ends, and a screen frame fitting into the pan above the bottom thereof.

July 6. No. 585,732. Ore Separating Apparatus. T. G. Barlow-Massicks, Massicks, Arizona. The apparatus is mounted upon a car truck and is fed by a steam shovel; the matter is washed to the washing cylinder by means of a hose.

Copies of these patents may be obtained for five cents each by addressing the Commissioner of Patents, or for ten cents each by addressing Townsend Bros.

LOS ANGELES MINING AND STOCK EXCHANGE.

There was considerable business reported from the Exchange in the last two weeks, although there is little to be said in regard to the advancement of prices.

The Cariboo, of British Columbia, sold some stock at 48c. and 49c., but very few sales are reported. The Cariboo is capitalized at \$300,000, at a par of \$1.

The Wedge, of Randsburg, seems to remain at about \$1.02, with an immense number of sales. Friday, July 9th, there were 2100 shares of Wedge stock sold at prices averaging \$1.02. The company is incorporated for \$500,000, at a par of \$1. The monthly dividend of the Wedge, of two (2) per cent, was declared payable July 10th.

The Laguna, of San Diego county, capital \$500,000, at par value of \$2.50, reports very little business of any kind.

The capital stock of the Rand Mountain is \$1,000,000, at a par of \$1. Considerable business was reported by the company at 3½c. Sales of 5000 at 3½c. were common.

The Pacific Consolidated, of Red Rock, Kern county, which has a capital of \$1,000,000, with \$1 as the par, was also very active at 1¼c. The ledge seems to show improvement with development.

The Brown-Dake, of Arizona, which was one of the first mines listed on the exchange, seems to be rather quiet at 12½c. The capitalization of the Brown-Dake is \$1,500,000, with a par of \$1.

Of the unlisted active stocks, the Volcanic, of Arizona, was dull at 30c. The Iron Mountain, of Cripple Creek, Colo., was held at 1½c., with bids of 1½c., a few sales were made at that figure.

Very few sales were reported at the Portland, of Cripple Creek, Colo. Average bid was 65c.

A slight decline in the Little Butte stock, of Randsburg, was reported—offered at 28c., bid 15c.

A rich strike in the Mollie Gibson, of Aspen, Colo., has advanced the price of stock from 20c. to 70c. in the east, but the change was not felt very strong here. The Mollie Gibson is capitalized at \$5,000,000, at a par of \$1.

The Val Verde, of Randsburg, is rather dull—offered at about 10c. and bid 7c.

The first offering of the Magganetta stock, of Randsburg, at 2c. per share was made last week, only a small block of 25,000 shares of treasury stock was offered at that figure, and prices soon advanced to 2½c.

Leon, of Riverside county, is offered at 40c.

The Anaconda, of Cripple Creek, Colo., was featureless and unchanged as to quotations, and very few sales were made.

Argentum Juanita, of Aspen, Colo., which has a capital of \$2,500,000, was dull, little or business being reported.

The Isabella, of Cripple Creek, Colo., also incorporated for \$2,500,000, is steady in the Colorado market, at an average of 29c., but is very dull here.

The Exchange is now on a good basis, and is in a fair way to become a great success.

Los Angeles is the natural center of a vast area of mineral lands, of which a considerable section has been located, and development work has shown to be unequalled in California, there is therefore no valid reason why an exchange was not organized before in this city.

First International Gold Mining Convention.

The first International Gold Mining Convention met in Broadway Theater, July 7th, with fully six hundred delegates in attendance and two hundred more expected. It was called to order by the chairman of the Executive Committee, and after prayer by Rev. M. A. Ellis and roll call, Acting Mayor Scobey welcomed the delegates. He was followed by Gov. Alva Adams, who delivered an address of welcome and explained the purpose of the convention.

He said in part that to increase the gold-mining industry was the purpose of this convention. While local selfishness may have inspired the call, the importance of gold production reaches beyond the interests of the miner who mines it, or the State in which it is found, and becomes a question as wide as human commerce and civilization. Gold is the only deity before which universal man has ever bowed. This convention represents States which produce one-fourth of the gold of the world, and can, with the encouragement of capital, double that production.

"Our desire," he said, "to increase the product of gold is inspired by patriotic and industrial sentiment and aspiration. We want not the gold that is the god of conquest; not the gold that is the god of the miser, but that which is the handmaid of industry; the vehicle of enlightened faith; the means of broader culture and education that will liberate the people from the thraldom of idleness; all in all, gold that will be the agent of a higher and nobler civilization than we have yet known."

"What blood is to the human system, money is to the world's system of business and commerce. As it has been scarce or plentiful, civilization ebbed and flowed. While all other products perish, gold and silver remain permanent contributions to the world's wealth. In their production you compete with no one, injure no one, but promote the welfare of all. The production of gold adds to the product of the field, farm and orchard. It gives work to the laborer, mechanic and professions; patronage to the merchant and manufacturer; support to every industry. He who discovers a Cripple Creek, a Leadville or a San Juan is a Columbus, a benefactor."

In conclusion, Gov. Adams paid a glowing

tribute to the miner and prospector, than whom, he said, few explorers had endowed the nation with richer dower.

At the afternoon session, Mr. Scott, of Omaha, chairman of the Credentials Committee, reported that there were no contests, and that the committee had invited all who were interested in mining to become delegates and participate in the discussions. The report was unanimously adopted.

R. F. Hunter, chairman of the Committee on Organization and Order of Business, recommended Bradford Prince, of New Mexico, for permanent president; David T. Littler of Illinois, John Dern of Utah and Gen. Alex. Barara as vice-presidents at large, and that each State select a vice-president and member of the Executive Committee from its delegation.

Hon. Irwin Mahon of Colorado, was named for permanent secretary, and O. W. Crawford of Illinois as assistant. It was also recommended that all discussions be confined to mines, mining and kindred subjects, and that every State, Territory or foreign nation be allowed ten votes, providing they have that many delegates present; if not, then one vote for each delegate. The report was adopted.

Earl B. Coe, of Colorado, introduced a resolution, calling upon Congress to put cyanide of potassium on the free list; M. D. Herring, delegate from Texas, a resolution, authorizing the president of the convention to appoint a committee of five to investigate and report upon the advisability and feasibility of memorializing Congress to create a department of Mines and Mining, and for the appointment of a head thereto, who shall be styled the Secretary of Mines and Mining, and shall be a member of the President's Cabinet. The rules were suspended and both resolutions were adopted. After the appointment of the usual committees, the convention adjourned until July 8th.

PERSONAL NEWS ITEMS

Morris Wommer of San Francisco, who has been over in Gold Creek, Nevada, investigating some placer mines, has returned to his home.

A. James of Los Angeles, a mining man well known throughout the southwest, was in Ensenada, Lower California, Mex., July 9th. Mr. James has been visiting the Jacalitos district.

Thos. Sedgwick, who has been mining in the Yaqui district of Sonora, Mexico, came in to El Paso, Texas, last week.

C. W. Kinney returned July 2nd to Winnemucca, Nevada, from Wadsworth, where he has been looking at the Olinghouse mines.

W. M. Bretherton, son of S. E. Bretherton, manager of the Silver City Reduction Works of Silver City, N. M., arrived in the above city last week from New Jersey.

C. F. Karns of this city is traveling in Arizona. He was in Phoenix, Arizona, the fore part of the month.

A. A. Spendlove, who has been on a visit to New York, has returned to Chihuahua, Mex.

Mr. Packard, representing the Michigan company that has taken hold of the Levianthian copper mine at Monitor, Nevada, is in Alpine county, and report says that he will put several men to work on the mine in a few days.

Ex-Gov. Thornton of New Mexico is now in Denver, Colorado.

Fred Battershell, who has been investigating mining in Arizona, has returned to New York City, his home.

G. C. Beckman, a prominent mining man of Parral, Mexico, is visiting in the city of Chihuahua.

Messrs. McNutt and Ware, well known San Francisco mining men, are making a tour of the mining districts of Lower California adjacent to Ensenada.

Hon. F. A. Reynolds of New Mexico, made a call at the Miners' Bureau in Denver, Colo., last week.

Murray Innes, superintendent of the Lost Gulch Mining Company, returned to Globe, the first of the month, from a trip to Clifton and Morenci, Arizona.

Dr. W. S. Scott of San Antonio, Texas, returned home from Mexico, where he has been purchasing some asphalt and petroleum lands for the Mexican Texas Asphalt Co.

Hon. W. H. Llewellyn of Las Cruces, New Mexico, is stopping at the Albany Hotel in Denver, Colorado.

Dan Gerard, who left Globe, Arizona, some time ago, has returned to his home in New York.

W. H. Bradley of this city, has recently returned from a trip to Lower California. He has been inspecting some mining properties in San Telmo near Ensenada.

J. W. Caldwell of Pueblo, Colorado, was in Chloride, N. M., last week, investigating some mines on Monument Creek, which he is interested in.

Edmund de Stontz, M. E., assistant superintendent of the Continental, near Phoenix, Arizona, has accepted a very flattering offer from a French company to go to the antipodes to manage a large gold mine. He expects to leave for Australia within a month.

Mr. H. F. Hartzell of Los Angeles, returned to Ensenada, Lower California, Mexico, the fore part of this month, accompanied by Mr. J. J. Lonergan of this city. Mr. Lonergan is of the firm of Lonergan & Colkins, gold and silver refiners and assayers, mining experts and promoters. He will pass a few days in Alamo and vicinity, and both gentlemen left Ensenada for the Viznaga mine Tuesday evening, July 6.

The Case Brothers of Pueblo, Colo., who have a lease on the Fannie mine, over on Monument Creek, was in Chloride, N. M., last week.

Miles W. Gibbons, general manager of the Kassar Gold Mining Company, returned to Globe, Arizona, July 5th, from Denver, Colo., where he has been purchasing mining machinery.

A. W. Davis of the Viznaga mine in Lower California, Mexico, has recently returned to this city.

Henry Woods of the Lone Star mine, returned to Bland, New Mexico, from a business trip to Santa Fe, N. M.

J. R. Scarles, the mining man of Los Angeles, is now in Arizona.

F. M. Frank, the old reliable Utah mining man, has returned to this city from a trip north. He will leave in a few days for Arizona, and probably go to Mexico where he is interested in some mines.

Frank Morgan of the Devine mines in the district of Comobabi, Sonora, Mexico, recently paid Tucson, Ariz., a visit.

S. Guggenheim, the noted smelter man, is now in the City of Mexico.

John T. Graham, general manager of the Helen Mining Co., of Graham, N. M., arrived from Denver, Colorado, the last of June.

F. S. Munson of Los Angeles, recently went to Topeka, Kansas, on important business.

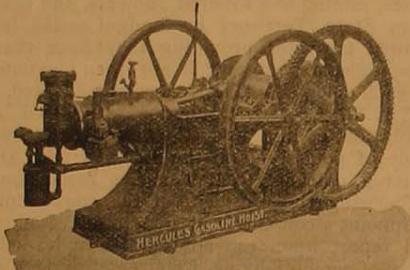
H. L. Van Winkle, a well-known San Francisco manufacturer of mill machinery, who has been east, has just returned home to San Francisco.

C. H. McLenathan, a prominent mining man of New Mexico, was one of Los Angeles's visitors last week.

W. A. Clark, the noted mine owner of Butte, Montana, is said to be in Europe on mining business.

John B. Farrish, the well known mining expert, at present of Denver, Colorado, and his son were visitors at Bland, N. M.

O. T. Sherwood and Charles H. Tenney of Connecticut, officers and stockholders of the Mt. Wilson Gold Mining Company, near Telluride, Colorado, were at the mines last week.



Hercules Gas, Gasoline & Distillate Engines

Hoisting Engines 2 to 200 H.P. Stationary Engines 1 to 200 H.P. Marine Engines 2 to 200 H.P.

Our newly designed and perfected DISTILLATE VAPORIZER insures a saving of 50 per cent. on cost of running. Just ½ your expense saved by using a HERCULES in place of any other. We make no exceptions.

Nearly 3000 Hercules hoisting, Stationary and Marine Engines in Actual Use. High Grade.

We claim full power, automatic and positive adjustment regulating speed and consumption of fuel in proportion to work being performed. No spring electrodes to burn out. All springs are outside. Points of ignition, speed and amount of fuel can be changed while engine is in operation.

We make a Specialty of Mining Trade. Address **Hercules Gas Engine Works**

217 Bay Street, SAN FRANCISCO, CAL.

Write for Illustrated Catalogue

ENGINES GAS GASOLINE DISTILLATE

Cheap.

Reliable.
Weber Gas & Gasoline Engine Co.
434 S. W. Blvd., Kansas City, Mo.



MISSOURI DREDGE CO., KANSAS CITY, MO. Placer Mining Dredges a Specialty

Tutthill Water Wheel

The Best Jet Impulse Wheel in the Market, BARRING NONE.

Wheels, Buckets and Nozzles designed to suit Special requirements, when Head and Conditions are Given. Theoretically as well as practically Perfect. Highest Efficiency Guaranteed. Contracts taken for any size plant



We have a Sensitive, Simple and Durable Governor, entirely new and novel, that will positively regulate speed of wheel. Specially adapted for electric railway and Lighting Plants.

OAKLAND IRON WORKS, BUILDERS,

Write for Catalogue

108 First Street, San Francisco

Telephone 1007 Main

Ores! Ores! Ores!!

Gold, Silver and Lead Ores and Concentrates

Purchased at Reduced Rates for Treatment.

Selby Smelting and Lead Co.

416 MONTGOMERY ST., San Francisco

Consign Shipments to Vallejo Junction, Cal.

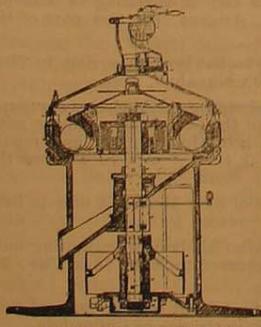
MORRIS BALL PULVERIZER



IT POSSESSES GREATER CAPACITY THAN ANY MACHINE OF EQUAL WEIGHT. IT PULVERIZES HARD OR SOFT ORE EQUALLY WELL. IT MAKES NO DUST IN DRY PULVERIZING. IT REDUCES EITHER WET OR DRY EQUALLY WELL AND PULVERIZES TO ANY DEGREE OF FINENESS.



For further information Catalogues and Testimonials apply to
D. M. DOUB, General Agt., 137 First St. San Francisco.



MORRIS BALL PULVERIZER



MORRIS BALL PULVERIZER

R. H. Officer of Salt Lake City, Utah, is spending a few days in this city investigating the mining possibilities of Southern California.

T. H. Jenks, son of Wm. Jenks, the superintendent of the Washington mine, accompanied by Prof. Du-puy of Albuquerque, made a visit to Bland, N. M.

J. F. Milner of Banning, who is interested in some mines on the desert, was a caller at the JOURNAL office last week.

Arthur Pratt of Magdalena, N. M., went over to Chloride last week.

R. G. Eckis of Kingman, Ariz., has returned home from this city.

D. B. Gillette, Jr., son of D. B. Gillette, manager of the Hearst properties at Pinos Altos, N. M., arrived in Silver City the last of June from New York.

J. T. Dongene, a well known Chicago mining man, arrived in Kingman, Ariz., the first of July, and will invest in some mines in that section.

C. G. Van Fleet, who is interested in some mines in Riverside county, in the vicinity of the Eagle Mountains, is now in Los Angeles.

H. Giles, of this city, has gone to Bland, N. M., to accept a position with the Bland Milling Co.

Fred'k Howe Bostwick of the Hendrie & Botthoff Mfg. Co., was a visitor in Los Angeles last week and called upon the JOURNAL.

B. M. Lawrence, a mining man of Ivapah, Cal., recently went to Kingman, Arizona, with a shipment of ore for the sampler at that place.

Win. Conners, the well known miner of Prescott, Arizona, has left for Pinos Altos, N. M.

A. C. Tingman, the mining man of Indio, Calif., came into the city a few days ago to get a cool breeze.

R. A. Stewart of Albuquerque, N. M., who has a patent "Oxygen process" for treating refractory ores, is expected to leave for British Columbia in a few days.

J. B. Coulston of Havilah, Kern county, Cal., who has been in Coudersport, Pa., for some time past, has just returned to Los Angeles, and will leave in a few days for Havilah.

A. M. Wells, who has the McCormick group of copper mines bonded in the Dragoon Mountains in Arizona, and who is at present in Denver, is making arrangements for a new hoisting engine which is to be shipped to the mine and further work prosecuted with vigor.

Messrs. Pepper, Allen and Gladden, mining brokers of this city, have recently made a visit to Randsburg, Cal.

F. H. Maynard, the prominent mining man, has been looking over the Cochiti mining district of New Mexico.

Clarence S. King, the noted mining expert, has returned to this city from a trip through Oregon and British Columbia.

Ed Burke returned to his home in Kingman, Ariz., the fore part of the month from Pueblo, Colorado, where he has been looking after the interests of the Arizona Sampling works.

J. H. Middlebrook, a mining man of Davenport, Colo., was in the city last week on a visit.

W. H. Hardinge of Denver, Colo., has been spending a few days in Los Angeles on mining business.

Dr. W. O. Webb, who is interested in mining in Randsburg, is in the above place at the present time.

Henry Lockport of the Crown Point Mining Co., was in Albuquerque from Bland, New Mexico, last week.

Ed. M. Foltz, the able superintendent of the Gladitor mine, has returned to Prescott from a visit to Phoenix, Ariz.

F. A. Austin of Denver, Colorado, has been in the city the past week.

W. B. McConnell of Randsburg, Cal., has gone to San Francisco, where he intends to reside.

OBITUARY.

Nicholas C. Creede, the millionaire mine owner, and discoverer of Creede, Colorado, died at his home in this city, July 12th, from an overdose of morphine.

S. A. Douglass, the noted mining expert and thorough metallurgist; a graduate of the Ballarat School of Mines of Australia, whose loss every one who knew him will regret, was instantly killed, on June 30th, while sluicing in the Grubstake mine, on Old Baldy, in Los Angeles county. He was standing in the sluice, when about 70 or 80 tons of rock, which was supposed to have been held by the roots of an old tree, came down upon him from the bank above. Mr. Douglass was a native son, having been born in San Francisco, July 15, 1864.

Lacy Manufacturing Co.

Manufacturers of

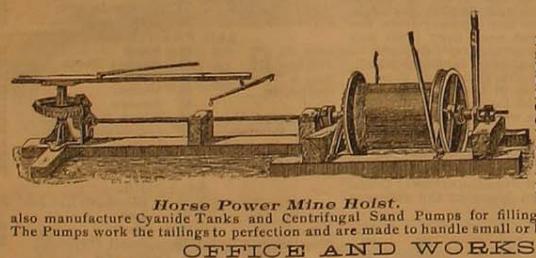
Steel Water Pipe, Well Casing, Oil Tanks and General Sheet Iron Work, Irrigation Supplies, Steel Water Pipe for Hydraulic Purposes.

4 BAKER BLOCK,

LOS ANGELES, CAL.

KROGH MANUFACTURING CO.

Successors to the San Francisco Tool Co.'s Mfg Dept., builders of Engines and Centrifugals Pumps for Mining and Water Works. These pumps can be operated by horse power, water power steam, gasoline or electric motors.



Horse Power Mine Hoist.

also manufacture Cyanide Tanks and Centrifugal Sand Pumps for filling and discharging them. The Pumps work the tailings to perfection and are made to handle small or large quantities.

OFFICE AND WORKS

51 Beale St., and 9 to 17 Stevenson St.

San Francisco, Cal.

DR. F. W. DRAKE, E.M.

WILL EXAMINE AND

Report on Mines,

Furnish Plans and Estimates.

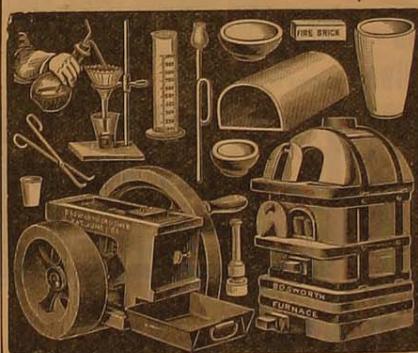
P. O. Box 380 SONORA, CAL.

J. B. TOMLINSON, M. E.

Prescott, Arizona,

MINING PROPERTIES EXAMINED, APPRAISED AND REPORTED UPON

— AND —
Supervision taken of the development of prospects and the operation of mines.



FACTORY:

3101-3141 Blake St., 1742-1746 Champa St., Denver, Col.

THE Denver Fire Clay Co.

Assayers' and Chemists' Supplies

MANUFACTURERS OF

Crucibles, Scorifiers & Muffles

And all other kinds of

Fire Clay Material.

SPECIALTIES—Strictly c. p. Acids

Test Lead, Bone Ash, Cyanide

Potash, Argol, Borax, Borax Glass

Iron Sulphides, Litharge, Soda,

Mining Fluxes, etc.

Sole Agents for the Ainsworth Balances

OFFICE:

127 W. FIRST ST. LOS ANGELES, CAL.

CHICAGO SCHOOL OF ASSAYING,

J. DUNRAVEN YOUNG, Director

1759 MONADNOCK BLDG., CHICAGO, ILL.

Courses in Elec Chemistry, Chemical Analysis, Fire Assaying of Gold, Silver, Copper and Lead Ores, etc. Ore Testing, including Mill Runs by Mercury, Cyanide and Chlorination processes. Individual Instruction only. Open evenings. Opportunity for Miners & Prospectors.

B. T. LLOYD

GOLD MINES,

Stocks and Bonds BOUGHT AND SOLD

McCormick Building, Salt Lake City, Utah

B. M. CALKINS

'PHONE "BLACK" 891.

J. J. LONERGAN

LONGRAN & CALKINS,

Gold and Silver Refiners and Assayers

MINING EXPERTS AND PROMOTERS

Miner's Gold and Silver Bought

Also Old Gold and Silver

Agents for S. S. LIGHTFOOT SYNDICATE

Cable Address "Lonergan, Los Angeles"

London, England.

127 W. FIRST ST. LOS ANGELES, CAL.

THE CHRYSOMETER.

A CHEMICAL ASSAY OUTFIT. Anyone can use it. Chemicals enough for 100 assays with each \$25 outfit. J. W. PETTEE, Sole Manufacturer, 907 17th Street, Denver, Colo.

WADE & WADE

Best and Oldest Establishment in Southern Cal.

115½ N. Main St., Los Angeles, Cal.

AUSTIN BROS.

IRON, STEEL, MACHINISTS AND BLACKSMITH SUPPLIES

Iron Pipe, Oil Cups, Lubricators, Belting, Packing, Lacing, Asbestos Covering, Steam and Water Gauges, Shovels and Picks, Fairbanks Scales, Brass and Iron Steam Fittings, Etc., Etc.

Stockton, Cal.

421 Market St., San Francisco, Cal.

Assayers and Chemists

WADE & WADE

Best and Oldest Establishment in Southern Cal.

115½ N. Main St., Los Angeles, Cal.

AUSTIN BROS.

IRON, STEEL, MACHINISTS AND BLACKSMITH SUPPLIES

Iron Pipe, Oil Cups, Lubricators, Belting, Packing, Lacing, Asbestos Covering, Steam and Water Gauges, Shovels and Picks, Fairbanks Scales, Brass and Iron Steam Fittings, Etc., Etc.

Stockton, Cal.

421 Market St., San Francisco, Cal.

Cobb & Hesselmeier,

MECHANICAL AND HYDRAULIC ENGINEERS

421 Market St., San Francisco, Cal.

An Assay

Will show what is in your ore.....

A Mill Test

Will show what you can get out of it

We Do Both

Practical working tests made of ALL CLASSES OF ORES and advice given as to best methods of extracting values. Mines examined and reported on. Twenty years experience with Pacific Coast ores.

F. M. Johnson & Co.

23 Stevenson Street,
SAN FRANCISCO, CAL.

LOS ANGELES SEWER PIPE ASSOC'N.

MANUFACTURERS OF

Fire Brick, All Fire Clay Products, Milled Fire Clay, etc.

For Fire Boxes, Lime Kilns, Furnaces and Smelters.

Also Dealers in English Fire Brick

Special Facilities for Supplying Assayers and the
Trade of the Southwest.

649 and 651 S. BROADWAY,

LOS ANGELES, CAL.

PATENTS !

TOWNSEND BROTHERS

SOLICITORS OF PATENTS

Patents on Inventions secured in all countries. Copyrights, Trade Marks and Labels.

Office, 9, Downey Block,

Telephone 347. Los Angeles, Cal.

GOLD

—AT—

CRIPPLE CREEK.

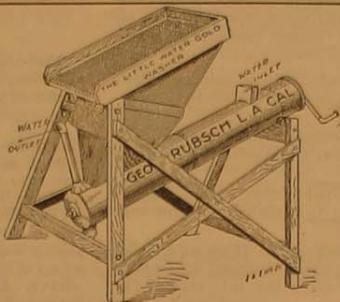
The heart of the Mining District is reached by the Midland Terminal Railway, which is the direct connection of the

Atlantic and Pacific Railroad Southern California Railway

Through Palace Sleeping Cars and Through Tourist Sleeping Cars run every day from both San Francisco and Los Angeles to La Junta, Colorado, where immediate connection is made for the

GOLD DISTRICT

Through Tickets and Sleeping Car Reservations can be obtained at the Ticket Office of the Santa Fe Route

644 Market St., San Francisco
2d and Spring Sts., Los Angeles

The Little Water Gold Washer
AIR PIPES AND TANKS for Mining Purposes
For full particulars apply

219 Commercial St., LOS ANGELES, CAL.

THOMAS J. DEE & CO.

Gold and Silver Refiners and Assayers

67 and 69 Washington St.,

Bullion Bought and Sold CHICAGO, ILL.

DENVER PUBLIC --- SAMPLING WORKS,

M. E. SMITH, PRESIDENT.

ORES SOLD ON THE
PUBLIC MARKET. Denver, Colo.

Attention Mining Men!

J. MAIT'S DRY GOLD SAVER

Manufactured and Exhibited at

625 Howard Street,

San Francisco, Cal.

FINE Gold Saved as Easily as the COARSE. NO WATER required for Cleaning up. We save 95 per cent. Come and witness a test on dry ground. Capacity of Standard Machines 10 Tons. Weight 125 lbs. Price \$90.00; First-Class Material Used Throughout.

Capacity of Small Machine 8 Tons; Weight 80 pounds; Price \$80.00

Machines are easily Taken Apart to be packed or carried anywhere.

We build Machines to any size—power or hand. Orders promptly attended to. Call or write for Circulars.

F. GOTTFRIED, General Manager and Manufacturer,
625 Howard Street, San Francisco, Cal.

HOME MANUFACTURE

FOWLER'S

Fossil and Asbestos Sectional Covering
As a Non-Conductor, Unequalled
Special Rates for Steam Boilers
and Drums.

C. C. FOWLER,

656-58 HOWARD STREET, SAN FRANCISCO.

W. T. SMITH

JAMES IRVING

SMITH & IRVING, FORMERLY, W. T. SMITH & CO.

Gold Refiners and Assayers.

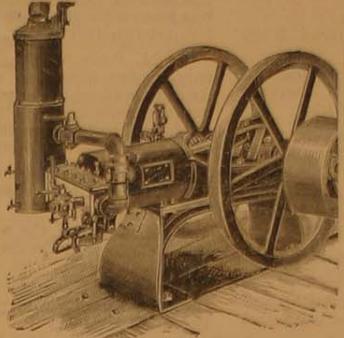
Bullion to any value bought and Cash paid for the same day it is received.

We guarantee two (2) assays on every sample left with us.

Our Mr. Smith owned and operated Smelting, Refining and Chemical works in Providence, R. I., for over 20 years.

128 N. Main Street Los Angeles, Cal.

Cheap Power!



Save Money by Using

“DANIEL BEST” Crude Oil Engine

This Engine can be operated on either Crude Oil, Distillate, Gasoline or Kerosene. IT IS THE CHEAPEST POWER ON EARTH and is not tied to any one kind of Oil, but can use any kind that will make gas and is not handicapped by being compelled to use a certain Oil. Do not forget this when in need of an Engine.

We guarantee our Engines to work perfectly on California Crude Oil, or Distillate, or any other kind of gaseous Oil; we however prefer CALIFORNIA CRUDE OIL, from Coalinga, Fresno county, for the reason that gas from Crude Oil will produce more power from the number of feet of gas used than from any other Oil and it is also a natural lubricant as well, the valves being always lubricated sufficiently to prevent them from sticking, thus assuring greater durability of the working parts than any other engine would be in using dry gas. And another advantage we claim is that risk from explosions is reduced to a minimum, there being no accumulation of gas but is used by the Engine as fast as it is generated and hence is absolutely safe. The following is a test that we made with one of our Five-HorsePower Crude oil Engines running ten hours on the different gas oils:

Cal. Crude Oil...40 grav.	7½ gallons. at 5c.	\$.375
Distillate...40 "	7½ " 8c.	.60
Dom. Coal Oil...40 "	12½ " 60c.	.934
Gasoline...74 "	8½ " 15c.	1.314
City Gas...		1000 feet.
		2.00

We manufacture all sizes from two-horse power up, and will guarantee that our Engines will run cheaper and are more simple in construction, have fewer parts and hence are more durable than any other Gas Engines on the market. Seeing is believing, don't take our word for it, but come and investigate for yourselves. You can always see one in operation at our works. We will be pleased to see you and will at all times take pleasure in showing them up. Our Engines are specially adapted for running well and mining machinery—in fact, for any kind of power desired, we are the pioneers and first inventors of Crude Oil and Distillate Engines. WE ALWAYS LEAD AND NEVER FOLLOW. Send for Catalogue and Price List of the only genuine Crude Oil and Distillate Engine made.

The Best Manufacturing Co. San Leandro, Cal.

METAL MARKET.

New York Quotations:

	SILVER	COPPER	LEAD
July 1	60½	11 12½	3 30
" 2	60½	11 12½	3 35
" 3	60	11 12½	3 35
" 4	60	11 00	3 35
" 5	60	11 12½	3 35
" 6	60	11 12½	3 35
" 7	60½	11 12½	3 35
" 8	60½	11 12½	3 35
" 9	60½	11 00	3 35
" 10	60½	11 12½	3 35
" 11	60½	11 12½	3 35
" 12	60½	11 12½	3 35
" 13	60½	11 12½	3 35
" 14	60½	11 12½	3 35
" 15	60½	11 12½	3 35

MINING STOCK QUOTATIONS

BOSTON			
Allouez	50	Franklin	11 00
Atlantic	28	Kennebunk	10 00
Boston & Mont'g	24	Ossipee	11 00
Butte & Boston	18	Quincy	112 00
Cal. & Helca	70	Tamarack	125 00
Centennial	9 00	Wolverine	10 50

COLORADO SPRINGS STOCKS			
Aetna	00 1/4	Ironclad	023 1/2
Alamo	02	Isabella	8 1/2
Anaconda	02	Isabella Stamp	42
Argentum Juanita	27	Iowa	22
Bangkok Corn Belle	27	Jack Pot	04 1/2
Bankers	04	Jefferson	08 1/2
Ben Hur	00 1/2	Keystone	08
C K & N	00 1/2	Mata	05
C C & Manitou	01 1/2	Mollie Gibson	73
Creede & C C	02 1/2	Monarch	05 1/2
Croesus	01 1/2	Mount Ross	08
C C Consolidated	06	Oriole	03 1/2
Des Moines	03	Orphan Bell	11 1/2
Fannie Rawlins	10 1/2	Pharmacist	08 1/2
Favorite	10	Portland	50
Franklin	04 1/2	People	01 1/2
Garfield Grouse	04	Sacramento	02 1/2
Golden Fleece	03	Specimen	03 1/2
Gold & Globe	15	Star of the West	00 1/2
Gold Standard	02 1/2	Trachyte	01
Humboldt	03	Union Gold	17 1/2
Ingham G	15	Virginia M	02 1/2
Ingleby	00 1/2	Work	04

DENVER STOCK REPORT			
Aetna	00 1/4	Elkton	92
Alamo	02	Eureka	00 1/2
Anaconda	02	Garfield Grouse	01
Arcadia	00 1/2	Golden Fleece	25
" Consolidated	01 1/2	Goldsmith	00 1/2
Argentum Junta	27	Gold Standard	02 1/2
Bangkok-C-Bell	02	Iron Clad	02 1/2
Bankers	04	Isabella	28 1/2
Ben Hur	02 1/2	Jack Pot	04 1/2
Bob Lee	04 1/2	Jefferson	08 1/2
Boston & C C	01 1/2	Mollie Gibson	70
Chimbarazo	00 1/2	New Zealand	05 1/2
C. K. & N	00 1/2	People's	01 1/2
Colo. C. & M.	01 1/2	Potosi	08 1/2
C. C. Con	06 1/2	Potosi	08

HELENA, MONTANA			
Am Den & M Co	95	Granite Mount	1 25
Bad Butte	2 25	Hope	50
Benton Group	10	Iron Mountain	40
Bi-Metallic	1 75	Moulton	30
Combination	35	Potosi	06

NEW YORK			
Crown Point	19	Sierra Nevada	35
Con. Cal. & Va.	1 80	Standard	1 75
Gould & Curry	30	Union Con.	30
Hale & Norcross	30	Iron Silver	40
Homestake	80	Quicksilver	3 00
Mexican	10 50	Quicksilver pd.	17 05
Ontario	71	Bulwer	22
Ophir	71	Yellow Jacket	25
Plymouth	20	Deadwood	45

SAN FRANCISCO			
Alta	18	Mono	15
Belcher	72	Nevada Queen	50
Best & Belcher	55	Ophir	71
Bodie Con	55	Potosi	06
Blackeye	55	Savage	38
Con. Cal. & Va.	1 80	Sierra Nevada	35
Hale & Norcross	30	Union Con.	30
Mexico	30	Utah	07
Gould & Curry	30	Yellow Jacket	25
Bulwer	25	Bulwer	25

ST. LOUIS			
American Nettie	25	Elizabeth	20
Granite Mt.	1 20	Leo	3
Adams	50	Hope	1 40
Blimetallic	1 75	Small Hopes	90

SALT LAKE CITY			
Ajax	46	Malvern	25
Alliance	25	Mammoth	1 45
Anchor	90	Mercut	7 90
Bogus	50	Morgan	22
Blackeye	55	Northern Light	90
Bull, Beck	5 40	Omaha	30
Cent. Eureka	45	Ontario	8 50
Chiocore Point	27 1/2	Overland	40
Dalton	02 1/2	Richmond Ana-	25
Daly	3 00	conda	02
Daly West	8 50	Rover	35
Dalton & Lark	10	Sacramento	20
Dexter	1 85	Silver King	14 00
Eagle	04 1/2	Sioux Con.	1 00
East Golden Gate	01	Sunbeam	07
Four Aces	08	Sunshine	35
Galeana	90	Swanson	2 25
Geyser-Marion	1 32 1/2	So Swanson	1 60
Horn Silver	1 75	Tetro	05
Little Pittsburg	03	Utah	95
Lucky Bill	12 1/2	Utah Con.	50

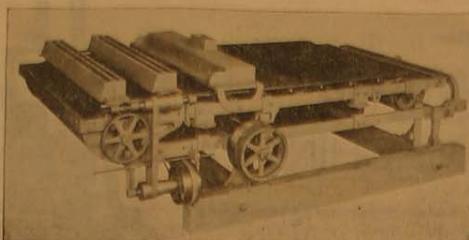
MEXICO

Name of Company	State	Price
Anguitas	Guanajuato	\$ 500
Asturiana y Anexas	Zacatecas	220
Cerro Colorado	Chihuahua	10
Concepcion y Anexas	S. Luis Potosi	180
El Oro	Guanajuato	50
do pre.	"	00
Luz de Borda	Michoacan	30
do Free stock	"	30
Luz de Maravillas	Hidalgo	160
Real del Monte	"	1,100
Rosario y Anexas	Durango	50
do, prof.	"	50
San Rafael del Oro	Guanajuato	90
Sta. Gertr y Anexas	Hidalgo	187
do, Free Stock	"	301
Sta. Maria de la Paz	S. Luis Potosi	480
Tlaulingo	Puebla	40
Zomelahuacan (gold)	Vera Cruz	100
Zona Min. de Pozos	Guanajuato	40

Note.—The above Mexican stocks are figured on the basis of Mexican silver

NEW IMPROVED McGlew Ore Concentrator

IN USE IN
California
Oregon
Washington
Nevada
Arizona Territory
Mexico
Central America
Australia



Patented
Sept.
1893

We guarantee these machines to handle an average of ten tons per 24 hours, and to do cleaner and closer work than any other CONCENTRATOR in use.

Price, \$300 Net Cash, f. o. b.
Write for Descriptive and Testimonial Circulars
THE McGLEW ORE CONCENTRATOR CO., 131 First Street San Francisco, Cal.

**GET THE
ORIENTAL GAS ENGINE**

It is the Only Engine on Earth.

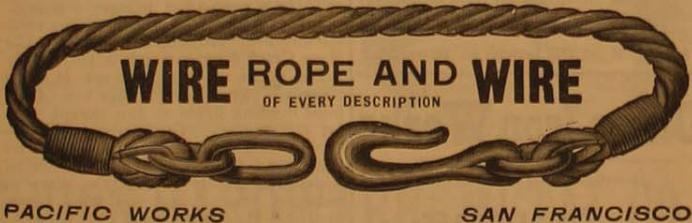
Write for Particulars

LOS ANGELES WINDMILL COMPANY

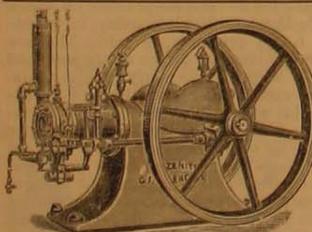
223 E. 4th ST., LOS ANGELES, CAL.

Dealers in all kinds of Pumping and Irrigating Machinery

WASHBURN & MOEN MFG. CO.



PACIFIC WORKS SAN FRANCISCO



Zenith Gas & Gasoline Engine
The Most Perfect Made,
SIMPLE, NOISELESS, ECONOMICAL. SMOOTH RUNNING,
AND EASY STARTING
WM. A. FRUHLING, Agt.
216 and 218 S. Los Angeles St., Los Angeles, Cal.

C. A. LUCKHARDT & CO.

Nevada Metallurgical Works, Established 1869

71 AND 73 STEVENSON STREET, SAN FRANCISCO, CAL.

Assaying, Analyses, Sampling.

Practical Working Tests of Ore by all Processes

STAMP MILL AND CONCENTRATOR IN OPERATION ON PREMISES

N. OHLANDT & CO.

MANUFACTURERS OF

Best Quality of BONE ASH for Assayers.

Our Goods are used in all parts of the United States and Mexico.

EXTRA No. 1 and No. 2

CORRESPONDENCE SOLICITED

327 MARKET STREET, SAN FRANCISCO, CAL.

MINING PIPE



STEEL OR IRON.—We make pipe of either, but recommend STEEL, it being superior to iron in many particulars and inferior to none.

WRITE FOR CIRCULARS OF
THE TRUAx PATENT AUTOMATIC ORE CARS.
SCHAW, INGRAM, BATCHEL & CO., Hardware Merchants
SACRAMENTO, CALIFORNIA.

Dry Gold Washers

ADAPTED TO PLACER MINING

MANUFACTURED BY

F. F. COLLINS,
MANUFACTURING CO.
SAN ANTONIO, TEXAS



Send for Catalogue of General Pumping and Water Supplies.

Chicago and Aurora Smelting and Refining Co.

PURCHASERS OF Lead, Silver and Gold Ores
Manufacturers of BLUE VITRIOL

Works at Leadville, Colo., Aurora, Ill., and Chicago, Ill.
General Office, Woman's Temple, Chicago, Illinois

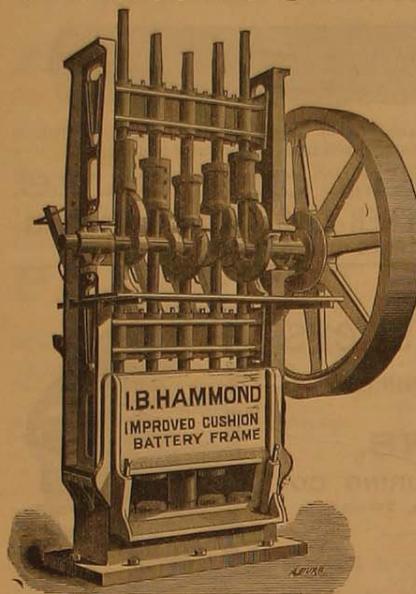
LOS ANGELES MINING AND STOCK EXCHANGE REPORT

* OF THE *

Average Bids and Offers, and Total Sales for the two weeks ending July 15th, 1897.

STOCKS	AVERAGE		TOTAL SALES
	BID	ASK	
CARIBOO, (British Columbia) Capital, \$300,000 Par, \$1	\$.48	\$.50	
WEDGE, (Randsburg) Capital, \$500,000 Par, \$1	1.01	1.03	3,100
LAGUNA, (San Diego) Capital, \$500,000 Par, \$1	.04 ¹ ₂	.05 ¹ ₂	
RAND MOUNTAIN, (Randsburg) Capital, \$1,000,000 Par, \$1	.02 ¹ ₂	.02 ¹ ₂	59,000
PACIFIC CONSOLIDATED, (Red Rock) Capital, \$1,000,000 Par, \$1	.01 ¹ ₂	.01 ¹ ₂	144,000
BROWN-DAKE, (Arizona) Capital, \$1,500,000 Par, \$1	.12 ¹ ₂	.11	
UNLISTED ACTIVE			
VOLCANIC, (Arizona) Capital, \$750,000 Par, \$1		.30	
IRON MOUNTAIN, (Cripple Creek) Capital, \$700,000 Par, \$1	.01 ¹ ₂	.01 ¹ ₂	1,000
PORTLAND, (Cripple Creek) Capital, \$3,000,000 Par, \$1	.66 ² ₃	.67 ¹ ₂	200
LITTLE BUTTE, (Randsburg) Capital, \$500,000 Par, \$1	.11 ² ₃	.26 ¹ ₂	
ANACONDA, (Cripple Creek) Capital, \$5,000,000 Par, \$1			
ARGENTUM JUANITA, (Aspen) Capital, \$2,500,000 Par, \$1			
MOLLIE GIBSON, (Aspen) Capital, \$5,000,000 Par, \$1			
ISABELLA, (Cripple Creek) Capital, \$2,250,000 Par, \$1			
VAL VERDE, (Randsburg) Capital, \$2,000,000	.07	.09 ¹ ₂	
MAGGANETTA, (Randsburg) Capital, \$500,000 Par, \$1	.02 ¹ ₂	.02 ¹ ₂	14,000
LEON, (Riverside) Capital,	.15	.42 ¹ ₂	

HAMMOND MANUFACTURING CO.



MANUFACTURER OF
STAMP MILLS
CONCENTRATORS
And all Classes of
MINING MACHINERY

Wire Rope Tramways with Automatic Loading Apparatus permitting the ore bins to be permanently open.

Specially made of the Improved, Iron Frame Self-Contained Stamp Mill, the greatest success of the day in reduction of ore to pulp. A great boon to mill builders in countries where timber is plenty and therefore a greater boon to those who have no timber from which to draw the huge pieces needed in old style mills. We claim for this mill:

- 1st. It is no longer a new thing, but well tried and its durability proven.
- 2d. Cheaper than the Wooden Frame Mill when ready to run.
- 3d. Saves a great amount of delay in erection and it can be set up in as short a time as a self contained engine.
- 4th. Saves much space.

We call the attention of Prospectors to our Self Contained Two Stamp Mill.

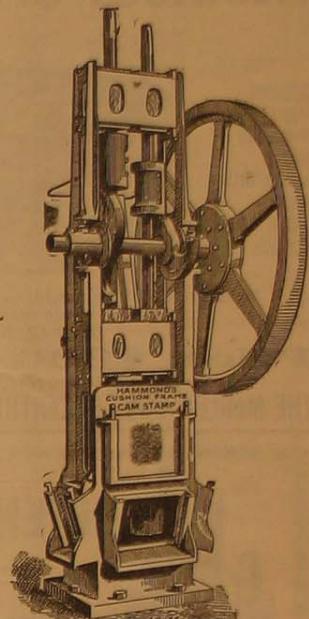
We have inaugurated a system of amalgamation and Concentration which renders both much more satisfactory and cheapens the cost of concentration by a great saving in the repairs to the complicated machinery now used.

Parties intending erecting mining plants would do well to investigate our mills. We build any mill desired and will deliver F. O. B. Steamer or cars at San Francisco, California.

We are prepared to furnish parties desiring small plants in localities where fuel is extremely expensive, with mills coupled up and ready to run with gaso-

line engines, guaranteeing the efficiency of both engine and mill.

Write us for Catalogues and Estimates



HAMMOND MANUFACTURING COMPANY

69 First Street,
PORTLAND, OR.

THE JOHANNESBURG SAMPLING WORKS

Purchasers of Gold, Silver, Copper and Lead Ores and Concentrates

Cash Returns Made Within Twenty-four hours after receipt of Ore.

CHAS. R. WORES, MANAGER,

Johannesburg, Cal.

SHEPARD, WHEELER & RHODES

Mining Engineers and U. S. Deputy Mineral Surveyors.

Have a Complete and Accurate Map made from Actual Surveys, showing all Mining Claims in the Randsburg Mining District.

Price, \$10.00 Randsburg Cal.

RANDSBURG A. J. PETTER, MINING ENGINEER AND ASSAYER

Examiner and Dealer in Mines. Have Several properties listed for sale. Correspondence solicited with intending purchasers.

It Pays to Advertise in the Journal.

Los Angeles Business College

212 WEST THIRD ST.,

LOS ANGELES, CAL.

Gives a thorough course in PRACTICAL ASSAYING and CHEMICAL ANALYSIS in connection with their other courses of study. For full information address them as given above.

School of Practical, Civil, Mechanical, Electrical and Mining Engineering. Surveying, Architecture, Drawing and Assaying. 983 MARKET ST. SAN FRANCISCO, CAL. OPEN ALL YEAR.

PROF. VAN DER NAILLEN, Jr. President. Assaying of Ores, \$45; Bullion and Chlorination Assay, \$25; Blowpipe Assay \$10. Full Course of Assaying, \$50. Established 1864. Send for Circular.

H. L. NELSON & CO. Real Estate and Mining Broker

Abstract Bureau & Notary Public. Correspondence Solicited.

RANDSBURG AND JOHANNESBURG, CALIF.

Nolan & Smith Mining • Brokers

Capital Furnished for Purchase of Mines and Prospects.

Also for Development of those that have merit. Send description and Samples 228 W. SECOND St., LOS ANGELES, CAL.

E. E. BURLINGAME'S ASSAY OFFICE a Chemical Laboratory

Established in Colorado, 1866. Samples by mail or express will receive prompt and careful attention. Gold and Silver Bullion refined, melted and assayed, or purchased.

Address 1736 and 1738 Lawrence St., Denver, Col.

Union Iron Works

Manufacturers of and Dealers in

Mining, Milling, AND Smelting

MACHINERY

Foundry and Machine Shops.

ALBERT THOMAS, Prop.

First and Alameda Sts. Los Angeles, Cal.

Miners' Assay Office

LOUIS SECKELS, MANAGER
24 W. 2d, South St., Salt Lake City, Utah
P. O. Box, 1315.

Assay for Gold and Silver 75 Cents.

Samples sent by mail or express will receive Prompt and Careful Attention.

BELTING Of all Descriptions, FOR MILLS MINES AND SMELTERS

Specialties
DYNAMOS, WATER PROOF,
RAWHIDE AND SEWED
... BELTING.

208 Mission Street, San Francisco, Cal.

Fred R. Cook,

208 Mission Street, San Francisco, Cal.

J. K. EVELETH

EVELETH & MACLYMONT,

ASSAYERS

Assays and Analyses of Ores. Practical Mill-tests by 3-Stamp Mill and Concentrating Plant

10 Annie Street, San Francisco

(Opposite Palace Hotel)

Telephone: Main 738

JOHN P. CULVER, Civil Engineer.

FRANK H. JACKSON, Mining Engineer

V. H. M. MACLYMONT

JOHN P. CULVER & COMPANY,
ASSAYERS, MINERALOGISTS and MINING ENGINEERS,
145 South Broadway, LOS ANGELES, CAL.

J. K. EVELETH

EVELETH & MACLYMONT,

ASSAYERS

Assays and Analyses of Ores. Practical Mill-tests by 3-Stamp Mill and Concentrating Plant

10 Annie Street, San Francisco

(Opposite Palace Hotel)

Telephone: Main 738

W. W. MONTAGUE & CO.

MANUFACTURERS OF

Riveted Sheet Iron and Steel

WATER PIPE

For Hydraulic Mining Power Plants and Mills.

Iron Cut, Punched and Formed for Making Pipe on the Ground Where Required to Save Freight.

GALVANIZED IRON Air Pipe, Concentrator Rolls, Water Tanks SAN FRANCISCO, CAL.

THE BI-METALLIC ASSAY OFFICE AND CHEMICAL LABORATORY.



Assaying in all its branches. Determinations accurately made.

R. A. PEREZ, E. M., Mgr.,

FORMERLY : Chief Assayer El Paso Smelting Works, El Paso, Tex.
Assistant Chemist Consolidated Kansas City Smelting and Refining Co., Argentine, Kansas.

(Prompt Returns.)

124 S. MAIN ST., LOS ANGELES CAL

\$33,189,500

Paid in Dividends by Utah Mining Stocks

Weekly Market Letter on Application,
Quotations by Wire or Mail.JAMES A. FOLLOW, Mining Stock Broker,
SALT LAKE CITY, UTAH.KENNETH DONNELLAN
Stock and Mining BrokerWeekly quotations furnished on request
Reference: Any Bank or Banker
in Salt Lake City, Utah.

A specialty Round, slot or burred slot holes, Genuine Russia, Iron, Homogeneous Steel, Cast Steel or American planished Iron, Zinc, Copper or Brass Screens for all purposes, CALIFORNIA PERFORATING SCREEN CO., 145-147 Beale St., S.F.

UNION HARDWARE AND METAL CO.

— DEALERS IN —

Boiler Tubes, Iron Pipe and Fittings RAILROAD, MILLING, MINING and FOUNDRY SUPPLIES

214 and 216 N. Los Angeles Street

Los Angeles, Cal.



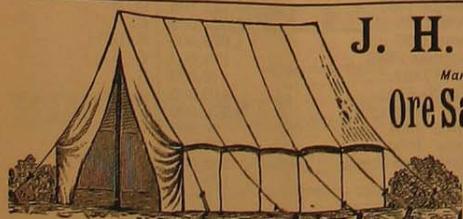
THE WILSON Forged High Grade Steel Shoes and Dies

Guaranteed to Wear Longer and Prove Cheaper than any others.
Made by use of Special Appliances. Patented Aug. 16th, 1892.

— Made only by —

WESTERN FORGE AND ROLLING MILLS,
St. Louis, MissouriJOSHUA HENDY MACHINE WORKS
SOLE AGENTS
38 to 44 Fremont Street, San Francisco, Cal.

J. H. MASTERS,
Manufacturer of and Dealer in
Ore Sacks, Tents and Camp Furnishings
218 Commercial St.,
LOS ANGELES, CAL.



TANKS

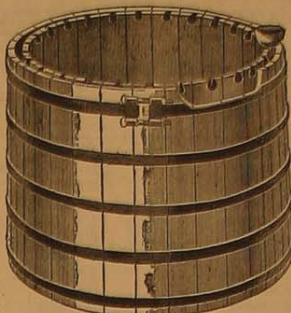
OF EVERY DESCRIPTION

— FOR —

Mines, Mills and Cyanide Plants Patent Non-Shrinking Water Tanks

The only Tank that will stand the Desert and Hot Climate.

Write for Catalogue and Estimate on any kind of Tank Work.



Pacific Tank Co.

33 BEALE ST., SAN FRANCISCO

To Gold Miners!

Silver Plated Copper AMALGAMATING PLATES

For Saving Gold In Quartz and Placer Mining.

EVERY DESCRIPTION OF MINING PLATES MADE.

Only Best Copper and Refined Silver Used. Old Mining Plates Replaced. Twenty-six Medals Awarded. Gold, Silver, Nickel, Copper & Brass Plating.

Denniston's San Francisco Plating Works

653 and 655 Mission Street, San Francisco, Cal.

Telephone, Main 5931.

E. G. DENNISTON,

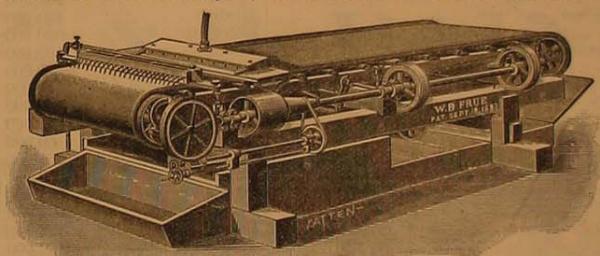
Proprietor

Send for Circular.

FRUE ORE CONCENTRATOR

Over 4,200 in Actual Use

Manufactured under Patents of April 27, 1880; Sept. 18, 1883; July 24, 1888; and March 31, 1891



It can be safely stated, without going into a description of several new and untried concentrators that have lately come into the market, that where sulphurates are of such values as to make close saving necessary, the Frue Vanner is always used. It is the only endless belt concentrator in the market that can be relied on to produce clean ore, and it gives perfect satisfaction. (In all competition of concentrators the Frue Vanner is taken as the standard machine of the world, and all comparisons made by it. There have been over 4,200 of these machines sold, 1,700 having been sold on the Pacific Coast alone.) They are in use in every part of the world where mining is carried on, and in all cases they are giving perfect satisfaction. From time to time valuable and important improvements have been made in this machine to increase its capacity and durability, and particular attention is called to the Patent Lip Flange for the rubber belt, which does away with nearly all the strain and cracking, as in the old style of flange, making the life of belt more than double that of other style belts in the market. The lip of flange bends outward in going over the large end rolls, thereby distributing the strain in the solid rubber, and bringing virtually no strain either at the edge or at the base of flange, as is the case in all belts with a raised edge.

Price of 4-foot wide Plain Belt Frue Vanner	\$500 f. o. b.
" Improved Belt Frue Vanner	600 f. o. b.
" 6-foot wide Plain Belt	600 f. o. b.

For any information, pamphlets, circulars or testimonials, call on or address

JAS. S. BROWNELL, Western Agent FRUE VANNING MACHINE CO.
Successor to ADAMS & CARTER
182 Market Street, San FranciscoF. M. ENDLICH,
Late Mineralogist Smithsonian InstitutionGEO. F. HOYT,
U.S. Deputy Mineral Surveyor

ENDLICH & HOYT.

Mining Engineers and Metallurgists

Mines and Processes examined and reported on. Specialties:—Treatment of Low-grade Ores, Concentration, Cyanide Leaching, Designing, and erection of suitable plants for refractory ores. Mines bought and sold. Only properties that will stand closest investigation considered. Surveying and umpire Assays and Analyses.

Correspondence Solicited.

Office: 201 Bullard Block,

Los Angeles, Cal.

INCORPORATED MINES PAYING DIVIDENDS.

NAME OF MINE	LOCATION	No. of Shares	Capital Stock	Par Value	Amount of last Dividend	Date of Last Dividend	Total Amount Paid in Dividends	Kind of Mineral Produced
Actna Union	California	100,000	\$ 500,000	\$ 5	\$ 10	June 1897	\$ 100,000	Q.
Adams	Colorado	1,500,000	1,500,000	5	04	October 1895	693,500	S, L, G.
Alaska, Treadwell	Alaska	200,000	5,000,000	25	10	January, 1897	3,100,000	G.
Alaska, McTeal	Alaska	200,000	1,000,000	5	37½	January, 1897	191,031	G.
Anavonida	Montana	100,000	30,000,000	25	1 25	Nov. 1896	2,250,000	C.
Anchorage, Leland	Colorado	600,000	600,000	1	01	May 1897	60,000	G.
Atlantic	Michigan	40,000	1,000,000	25	1 00	Feb. 1897	740,000	C.
Bald Butte	Montana	250,000	250,000	1	03	June 1896	470,500	S, G.
Bangkok C-Bell	Colorado	600,000	800,000	1	1	July 1896	107,510	S, L, G.
Big Six	Colorado	500,000	500,000	1	00½	April 1897	5,000	G, S.
Boston & Montana	Montana	150,000	3,750,000	25	3 00	Feb. 1897	5,375,000	G, C, S.
Bullion Beck and Chalmp	Utah	100,000	1,000,000	10	50	Mar 1897	2,465,000	G, S.
Cariboo	British Col.	800,000	800,000	1	02	Dec. 1896	125,410	G.
C. U. D.	Colorado	500,000	500,000	1	01	March 1896	25,000	G.
Calumet & Hecla	Michigan	100,000	2,500,000	25	15 00	Feb. 1897	48,350,000	C.
Centennial Eureka	Utah	30,000	1,500,000	50	1 00	Mar 1897	2,010,000	S, L.
Champion	California	3,400	34,000	10	25	April 1897	278,200	G.
Consolidated, California and Virginia	Nevada	210,000	21,600,000	100	25	March 1895	3,392,200	S, G.
Contis	Nevada	100,000	10,000,000	100	01	Feb. 1895	77,000	C.
Copper Queen Consolidated	Arizona	200,000	2,000,000	10	25	June 1895	1,910,000	C.
Crescent	Utah	24,000	600,000	25		July 1897	280,000	C.
Daly	Utah	150,000	3,000,000	20	25	Mar. 1897	2,925,000	S, L.
Deadwood Tetra	Dakota	200,000	5,000,000	25	50	August 1896	1,240,000	G.
De Lamar	Idaho	400,000	2,000,000	5	25	October 1896	2,250,100	S, L.
Dalton and Lark	Utah	2,500,000	2,500,000	1	00½	August 1896	87,500	S, L.
Elkhorn	Montana	200,000	1,000,000	5	06	June 1895	1,212,000	S.
Elkton Consolidated	Colorado	1,250,000	1,250,000	1	02	May 1897	266,960	G, S.
Florence	Montana	500,000	2,500,000	5	01	Jan. 1897	118,096	S.
Franklin	Michigan	40,000	1,000,000	25	2 00	January 1894	1,240,000	C.
Galena	Utah	100,000	1,000,000	10	05	Jan. 1897	71,000	G, S, L.
Garfield Grouse	Colorado	1,200,000	1,200,000	1	01	Dec. 1896	24,000	G.
Geyser-Marion	Utah	60,000	300,000	5	03	June 1897	27,000	G.
Golden Eagle	Colorado	1,000,000	1,000,000	1	01	Sep. 1896	10,000	G.
Golden Fleece	Colorado	600,000	600,000	1	01	Feb. 1897	569,179	G, S.
Gold Coin	Colorado	200,000	1,250,000	5	10	May 1897	140,000	G, S.
Gold and Globe	Colorado	750,000	750,000	1	3-10	August 1896	36,000	G.
Granite Mountain	Montana	400,000	10,000,000	25	20	July 1892	12,120,000	S.
Hecla Consolidated	Montana	30,000	1,500,000	50	50	January 1897	2,100,000	S, G, L, C.
Helena & Frisco	Idaho	500,000	2,500,000	5	04	August 1896	475,000	S, L.
Homestake	Dakota	125,000	12,500,000	100	25	Jan. 1897	6,118,750	G.
Hope	Montana	100,000	1,000,000	10	10	February 1897	862,252	S.
Horn Silver	Utah	400,000	10,000,000	25	12½	January 1896	5,080,000	S, L.
Iowa	Colorado	1,000,000	310,000	1	00½	Feb. 1897	65,000	G.
Iron Mountain	Montana	500,000	5,000,000	10	06	Nov. 1896	492,500	S.
Isabella	Colorado	2,250,000	5,000,000	100	02½	Mar. 1897	258,750	G.
Kearnsarge	Michigan	40,000	1,000,000	25	00	Dec. 1895	120,000	C.
Kennedy	California	100,000	10,000,000	1	48	August 1895	1,796,000	G.
Maid of Erin	Colorado	600,000	3,000,000	5	02	November 1895	740,000	S, L, G, C.
Mayflower	California	60,000	1,200,000	20	10	December 1895	242,000	G.
Minnesota	Minnesota	185,000	16,500,000	100	1 50	July 1896	3,240,000	L.
Mollie Gibson	Colorado	1,000,000	5,000,000	5	05	January 1895	4,080,000	S.
Montana Lt	Montana	660,000	3,300,000	5	06½	October 1895	2,890,637	G, S.
Moose	Colorado	600,000	600,000	1	01	January 1896	186,000	G.
Morning Star	California	2,400	240,000	100	7 50	May 1897	510,000	G.
Moulton	Montana	400,000	2,000,000	5	05	February 1894	460,000	S, G.
Mt. Rosa	Colorado	1,000,000	1,000,000	1	00½	Oct. 1896	30,000	G.
Mercur	Utah	200,000	5,000,000	25	12½	June 1897	725,000	G.
Mammoth	Utah	400,000	10,000,000	25	05	Nov. 1896	1,150,000	G, S, C.
Moon Anchor Gold	Colorado	600,000	600,000	1	01	July 1896	24,000	G.
New Elkhorn	Colorado	300,000	1,500,000	5	24	Sep. 1896	72,000	G.
New York & Hon. Rosario	Central A	150,000	1,500,000	10	10	Jan. 1897	690,000	S, G.
Napa	California	100,000	700,000	7	10	Apil 1897	830,000	Q.
New Idria Quicksilver	California	100,000			10	June 1897	10,000	Q.
North Star	California	100,000	1,000,000	10	50	June 1893	450,000	G.
Nugget	Colorado	1,000,000	1,000,000	1	00½	Jan. 1895	10,000	G.
Ontario	Utah	150,000	15,000,000	100	10	June 1897	13,430,000	S, L.
Osceola	Michigan	50,000	1,250,000	25	1 00	February 1897	2,122,500	C.
Pacific Coast Borax	California	20,000	2,000,000	100	1 00	July 1893	425,500	B.
Parrot	Montana	230,000	2,300,000	10	10	June 1894	1,622,000	C.
Pennsylvania Consolidated	California	51,500	5,150,000	100	05	May 1897	12,925	—
Plumas Eureka	California	140,600	1,406,000	10	18	October 1893	2,696,295	G.
Portland	Colorado	3,000,000	3,000,000	1	01	May 1897	1,013,000	G, S.
Quicksilver Pref.	Michigan	43,000	4,300,000	100	25	June 1891	1,823,911	Q.
Quincy	Idaho	50,000	1,250,000	25	8 00	February 1897	9,070,000	C.
Red Cloud	Colorado	200,000	1,000,000	5	10	December 1892	153,000	S, L.
Sacramento	Utah	1,000,000	1,000,000	1	00½	March 1897	22,000	G.
Sierra Buttes	California	222,500	2,225,000	10	12	October 1893	1,559,933	G.
Silver, Mg.	New Mexico	500,000	500,000	1	4 05	December 1891	300,000	S.
Small Hopes Consolidated	Colorado	250,000	5,000,000	20	10	March 1896	3,275,000	S.
South Swansea	Utah	30,000	150,000	5	05	June 1897	45,000	S, L.
Standard	California	100,000	10,000,000	100	10	March 1897	3,773,868	G, S.
St. Joseph	Missouri	250,000	2,500,000	10	25	Dec. 1895	2,524,000	L.
Silver King	Utah	150,000	3,000,000	20	25	June 1897	1,078,500	S, L, G.
Smuggler Union	Colorado	50,000	5,000,000	100	1 00	October 1896	150,000	G, S.
Swansea	Utah	20,000	100,000	5	05	June 1897	46,500	S, L.
Tom Boy	Colorado	200,000	200,000	10	20	March 1896	410,000	G.
Tamarack	Michigan	50,000	1,250,000	25	3 00	Dec. 1896	4,770,000	C.
Trinity River	Colorado	500,000	500,000	1		April 1894	37,500	G.
Union	Colorado	1,250,000	1,250,000	1	01	June 1896	73,000	S.
United Verde	Arizona	300,000	3,000,000	10	25	December 1893	562,500	C.
Utah	100,000	1,000,000	10	02	Feb. 1897	175,000	G, S.	
Utah Consolidated	Utah	30,000	150,000	5	02	Sept. 1896	3,000	S, L.
Victor	Colorado	200,000	1,000,000	5	10	Mar 1897	763,000	G.
War Eagle	British Col.	500,000	500,000	1	06	October 1896	187,000	

S, Silver.

G, Gold.

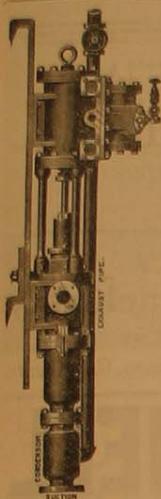
L, Lead.

C, Copper.

Q, Quicksilver.

I, Iron.

B, Borax.



W. T. GARRATT & CO. Brass AND Machine Works.

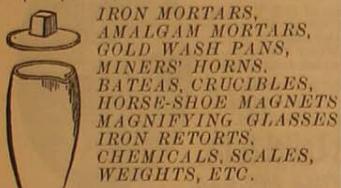
MANUFACTURERS

HOOKER STEAM PUMPS,
MINERS' SINKING PUMPS,
TRIPLE PLUNGER PUMPS,
JACKHEAD MINING PUMPS,
CENTRIFUGAL PUMPS,
GONGS FOR MINE SIGNALS,
LUBRICATORS & OILERS,
SUCTION HOSE AND COUPLINGS,
HYDRAULIC PIPES,
IRON PIPE AND FITTINGS
BABBITT METALS,
PACKINGS

REPAIRING PROMPTLY ATTENDED TO.

138 to 148 Fremont Street,
SAN FRANCISCO, CAL.

MINERS' OUTFITS.



Including a full assortment of Mine and Mill Supplies, Assay-
ers' Materials, Etc.

Sole Agents for the
Pacific Coast for the

W. S. TYLER WIRE WORKS CO.
Manufacturers of

Steel and Brass Wire Battery Screens
Agents for Baker & Johnson's Chemically
Pure Acids. A full Stock always
on hand.

Nitric Acid, sp. gr. 1.42; Muriatic Acid, sp. gr.
1.20; Sulphuric Acid, sp. gr. 1.845.

JOHN TAYLOR & CO.
62 FIRST ST., SAN FRANCISCO
Prices on application.

STATE ORE Sampling Works

Established 1880.

A general Ore Market. Largest Works in
Colorado. Modern Mills and Machinery
at Denver, Idaho Springs, and Black Hawk.

ORE SOLD ON COMPETITIVE BIDS.

Write for our reference book. Address
STATE ORE SAMPLING CO.,
Gold Bullion bought. Denver, Colorado.

ANGELS IRON WORKS
DEMAEST & FULLEN, Proprs.

Mining Machinery.

ANGELS, CALIF.
Write for estimates on complete Milling, Mining
and Reduction Plants.

WANTD — A well-developed cop-
per mine; also a body
of mill tailings for treatment on royalty by the
cyanide or other process.

F. C. GARBUUT
STIMSON BUILDING, LOS ANGELES, CAL.



THE CHEAPEST PLACE ON EARTH

TO OUTFIT A MINE IS AT

The J. H. MONTGOMERY MACHINERY CO.

1220-22 Curtis St., Denver, Colo., U. S. A.

Just Listen—Reliable Common
Sense Steel White, price reduced
to \$100. Steam Hoisters, \$200 and
up; hand hoisters \$30; steel ore
buckets all prices; prospectors'
stamp mills, \$300. A 10-
stamp mill, new, \$500. A
850 lb. stamp,
high mor-
tars,

latest improved, only \$800. Ores tested and
amalgamation and concentration mills built to
fit the ore and guaranteed to save what we say.

Coal Mine equipments, Screens,
Jigs, Tramways, Arastors, Chilian
Mills, Ore Sacks, etc., Cornish
Rolls, 12x20, weight 6,000 lbs.,
price \$350; Feeders, Rock Drills

Tables, Chlorination Mills, etc., Blake Crush-
ers, 7x10, weight
8,100 lbs., only \$250.

Cyanide Mills.

Our patent
Turntable Car
has equal load
on each
wheel, wears
even, dumps an-
automatically. Our 100

page catalogue with
hundreds of useful tables,
FREE. Best Machinery and
least money for it.

Seventeen years' practical experience
on Pacific Coast.

L. E. AUBURY

ASSAY OFFICE:

1428 E Street

Mining Engineer & Metallurgist

SAN DIEGO, CAL.

Special attention given to examination and re-
ports on mining properties on Pacific Coast.

Reference, Blochman Banking Co., San Diego.

Nelden-Judson Drug Co.

The Only House in Utah that
carries a Full Line of

ASSAYERS' & MATERIAL,

Furnaces, Scales, Balances,
Weights,

C. P. Cyanide Potash, Per Oxide Soda,
Blue Vitriol and All Chemicals.

*
Salt Lake City, - Utah

A.

A.

B.

A.

Y

MANUFACTURER AND DEALER OF THE LEADING

Packings and Engineers Supplies

LUBRICATING OILS AND COMPOUNDS

Exclusive Manufacturer of the UNSURPASSED

BAILEY

Anti-Friction Metal and all other Grades of Babbitt Metal

Sole Agents for Reliable Steam Pumps

300 South Los Angeles Street,

Los Angeles, Cal

P. & B. PAINT

FOR MINES, SMELTERS, CHLORINATION WORKS,
THE CYANIDE PROCESS.

—♦—♦—♦ WILL BE PLEASED TO MAIL CIRCULARS —♦—♦—♦

PARAFFINE PAINT COMPANY, - Los Angeles and San Francisco

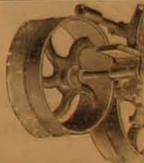
Second-Hand Machinery

Pumps, Engines, Boilers, Shafting,
Pulleys, Water Pipes, Belting, Etc.

Repairing Promptly Attended to at Lowest Rates.

McIntosh & Wolman,

San Francisco, Cal.



WE ARE THE SOLE AGENTS AND MANUFACTURERS OF THE

Finlayson Patent Wire Rope Tramway

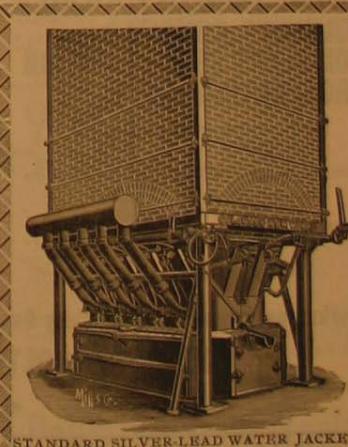
This tramway is the best that has ever been placed on the market. It has no rival. It is strictly automatic and its capacity runs up to 1000 lbs. per bucket. We especially call attention to the automatic loading and unloading terminals and intermediate stations, as being important improvements over all other systems. If you are interested in a tramway and want the best that can be had, write us for information.

THE COLORADO DENVER, IRON WORKS CO. COLO.

Contracting Engineers for and Manufacturers of

MINING, MILLING AND SMELTING PLANTS

We design and erect CRUSHING PLANTS with
guaranteed capacity to any degree fineness. Investi-
gate late improvements in our line of machinery.



STANDARD SILVER-LEAD WATER JACKET
SMELTING FURNACE.

AGENTS FOR
Erie City Iron Works Engines and Boilers, and
Smith-Valle Steam Pump.

CORRESPONDENCE INVITED

CATALOGUES ON APPLICATION

W. H. BIRCH & CO.

OFFICE AND WORKS, 127-129-131-133-135 FIRST STREET, SAN FRANCISCO, CALIFORNIA

→ Write for a Circular on the ←

"Birch" Improved TWO-STAMP MILL

IRON FRAME.

TRIPLE DISCHARGE.

850-LB-STAMPS.

FORGED STEEL SHOES AND DIES.

PRICE, \$450 F. O. B.

The Puget Sound Reduction Company PURCHASERS OF GOLD, SILVER, LEAD AND COPPER ORES

Special Facilities for Handling ores from the South-West and Mexico

EVERETT

WASHINGTON

J. C. WINANS, Sole Agent Peerless Rubber Manufacturing Co.

Winans' Ami-Incinitation Powder Gould's Ring Packing, Peerless Rod Packing, Eclipse Tubular Gaskets, Pulver Lubricating Compound, Rubber Pump Valves, Vulcanized Fibre Pump Valves, Magnolia Anti-Friction Metal, Tux Packing, Spiral Packing, Square Flax, Peerless Plumbago Sheet, Peerless Rainbow Sheet, Sheet Rubber of all kinds, Scotch Water Glass, W. & C. Water Glass Cutters. Deal in Supply all Packings on the Market, Special Hydraulic Pump Packing, Winan's Pressure Regulator; absolutely automatic. Pronounced by Experts the Best Manufactured.

220 FREMONT STREET, SAN FRANCISCO, CAL.

ANTI-CALORIC STEAM PIPE AND BOILER COVERING

In canvas JACKETTED SECTIONS and Plastic Material Manufactured in San Francisco under Patents controlled exclusively by the Co.

Certificate of Superiority Over All other Coverings awarded by Mechanics Institute Exhibition 1896

507 MARKET STREET,

SAN FRANCISCO, CAL

EASTERN PRICES BEATEN

IMPROVED FACILITIES, FINEST WORK LOWEST PRICES



PERFORATED SHEET METALS

For Flour and Rice Mills, Grain Separators, Shaker Screens, Gravel and Cement, Revolving and Shot Screens, Stamp Batteries, Iron, Steel, Russia Iron, American Plasish, Zinc, Copper and Brass Screens for all uses. Inventor and Manufacturer of the celebrated Slot, Burred and Diagonal Slot punched Screens.

MINING SCREENS A SPECIALTY

Mill owners using screens extensively, can contract for large quantities at favorable rates. J. W. QUICK is the only competitor and successful manufacturer of Screens on the Coast, having furnished Screens to the Principal Mills of

California, Nevada, Alaska, Mexico, Arizona, Central America, Australia and British Possessions.

San Francisco Pioneer Screen Works

(Established 1860)

221 and 223 FIRST STREET, SAN FRANCISCO.

J. W. QUICK, Prop.

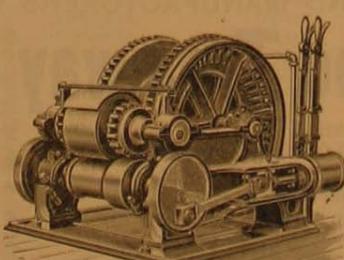
"MULTUM IN PARVO" BOLTHOFF COMBINED NOISELESS GEAR & FRICTION PROSPECTING HOIST

Extensively Used and Universally Recommended.....

Two Sizes—4x6 and 6x8 Double Cylinders
Can be seen at the new store of

CHAS. B. BOOTHE & CO.

Los Angeles, California.



Workmanship and Material Fully Guaranteed

HENDRIE & BOLTHOFF, Mfg Co.

DENVER, COLORADO, U. S. A.

MILLWRIGHT AND ENGINEER

Contractor for the Erection of All Kinds of Mining and Milling Plants.

E. L. HALLAWELL,

115 and 117 MAIN ST., SAN FRANCISCO, CAL.

SANDERS & JONES

Analytical Chemists & Assayers

21 W. 2d South Street,

SILVER CITY AND SALT LAKE CITY, UTAH

FULTON ENGINE WORKS Mining, Milling & Smelting Machinery

Estimates Furnished on all Classes of Mining Work

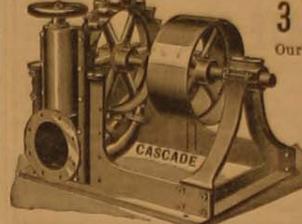
P. O. Box 296, STATION "C"

LOS ANGELES, CALIFORNIA

Turbine AND Cascade WATER WHEEL

Adapted to all Heads from

3 Feet to 2000 Feet



Our experience of 33 YEARS building Water Wheels enables us to suit every requirement of Water Power Plants. We guarantee satisfaction.

Send for a Pamphlet of either Wheel and write full particulars.

James Leffel & Co.
SPRINGFIELD, OHIO, U.S.A.



THOMSON & BOYLE PIPE CO.

MANUFACTURERS OF

RIVITED STEEL MINING PIPE

MADE OF BEST SHEET STEEL.

Water Tanks, Oil Tanks, Steam Boilers, Ore Cars, Ore Buckets, Etc., Etc.

Sheet Work of All Kinds. Correspondence Solicited.

310-314 Requena St., Los Angeles, Cal.

A. S. CAGWIN, Assayer : and : Mineralogist

Gold and Silver \$2.00. Gold \$1.50
Copper \$2.50. Lead \$1.50.
Mill Test \$1.00.

Fresno, California.

GOLD MINES!

In Julian District

SOUTH CALIFORNIA.

I have listed for selling, bonding or leasing. Strict investigation invited. Letters of inquiry about any mine or company answered for \$1. Inclose stamp for reply.

B. A. STEPHENS,

917 F STREET, SAN DIEGO, CAL.

Leonard & Ellis,

MANUFACTURERS OF



Oylinder and Lubricating Oils
F. ACKERMAN, Agt.
329 N. Los Angeles St.
Los Angeles, Cal.

KERN COUNTY ASSAY OFFICE

H. VINCENT WALLACE.

Graduate Royal School of Mines

BAKERSFIELD, CALIFORNIA



Assayer

AND

Chemist

Abbot A. Hanks

Successor to

Henry G. Hanks

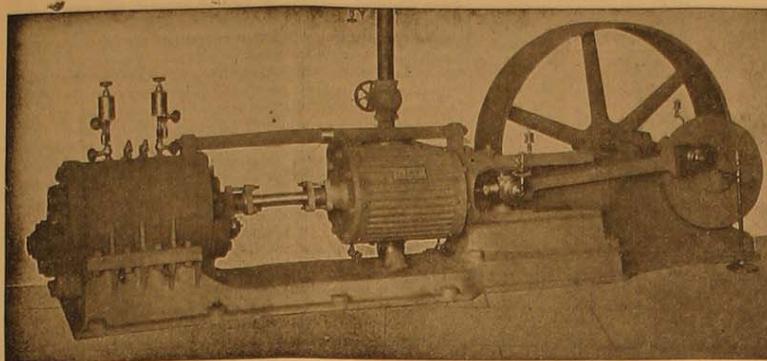
The supervision of Ores shipped to San Francisco a specialty. Established 1866.

718 Montgomery Street San Francisco, Cal.

THOMAS PRICE & SON

Analytical Metallurgical and Physical Testing Laboratory

524 SACRAMENTO STREET, SAN FRANCISCO, CAL.



AIR COMPRESSOR

C. DUCOMMUN,

300-302 N. MAIN STREET,

LOS ANGELES

**Assayers Materials,
Mine AND Mill Supplies**

Dixon's Black Lead Crucibles, Denver Fire Clay Crucibles, Muffles, Scorifiers, etc.; Quicksilver, Drill Steel, Retorts, Mortars, Gold Pans, Drilling Hammers, Drifting Picks, Horn Spoons and Shovels.

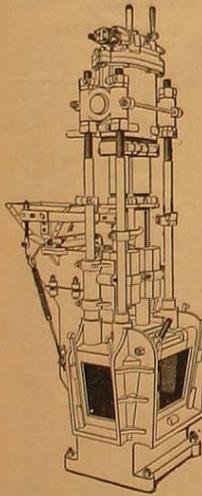
The Machinery and Electrical Company,

—Sole Agents—

Southern California, Arizona and Northern Mexico.

—For—

TREMAIN STEAM STAMP MILLS,
Oil City Boilers and Engines,
Rumsey Power Pumps,
LAWRENCE CENTRIFUGAL PUMPS,
Egan Wood-Working Machinery,
Bates Corliss Engines, Bliss Turned Steel Shafting,
SNOW STEAM PUMPS,
Olin Gas Engines, Bradford Mill Co. Lathes
GATES IRON WORKS MINING MACHINERY
Jewel Leather Belting,
Globe Rubber Belting,
Garlock Packing.
Westinghouse Electric and Manufacturing Company's
Lighting Railway and Transmission Apparatus
Sawyer-Man Incandescent Lamps,
Washburn & Moen Mfg. Co.'s Wires and Cables.



TREMAIN STEAM STAMP 351 and 353 N. Main St. Los Angeles, Cal.

**HALLIDIE
PATENT
ROPEWAY**

—FOR THE—

Transportation of Ore, Fuel and other material, has been erected by us all over the country and is the most economical and efficient method known. Nothing to get out of order; has always given satisfaction.

California Wire Works

[LICENCIERS]

Office, 330 Market St., San Francisco, Cal.



Mention the Journal.

FULTON ENGINEERING

— AND —

SHIPBUILDING WORKS**MINING AND MILLING MACHINERY**

Adapted to every description of Mining and Milling.

Office and Branch Works, 213 First street, San Francisco, Cal.

We Manufacture

**STAMP MILLS,
CRUSHERS,
CONCENTRATORS,
ENGINES,
PUMPS, HOISTS,**



Stockton Gas Engine, Water Wheels, Wood, Iron, and Clutch Pulleys, and general repairing of all kinds of Wood and Iron. All work done in our own Shop. Estimates furnished for Plants Complete.

Best equipped works in California outside of San Francisco.

CORRESPONDENCE SOLICITED



**Matteson
Manufacturing Co.**

STOCKTON, CALIFORNIA.

Los Angeles Tent and Awning CompanyManufacturers of
Tents, Wagon Covers, Ore Sacks, and Camp Furniture

A. W. SWANFELDT, Proprietor.

250 SOUTH MAIN STREET, LOS ANGELES, CAL

WIRE TRAMWAYS

Ropeways,
* Incline Planes,
and Railways.

Hoisting Apparatus, Patent Grip Pulleys, Transmission of Power by Wire Ropes; 25 years experience; Send for Ropeway Pamphlet.

California Wire Works

WORKS:

332 Bay Street,

San Francisco, Cal.

THE MINING AND METALLURGICAL JOURNAL.

ORE TARIFF.

From Points in Mexico, New Mexico, Texas and Arizona, to El Paso, Pueblo, Denver and Kansas City.

ATCHISON, TOPEKA & SANTA FE R. R.

FROM	TO	Car Loads, in dollars and cents per ton of 2,000 lbs.									
		Ore Concentrates					Base Metal, Copper Matte, Bar and Black Copper, valuation not to exceed \$300 per ton.				
		Valuation not to exceed \$50 per ton.	Valuation not to exceed \$100 per ton.	Valuation not to exceed \$300 per ton.	Lead Bullion, valuation not to exceed \$100 per ton.	Lead Bullion, Copper Matte, Bar and Black Copper, valuation not to exceed \$300 per ton.	Valuation not to exceed \$50 per ton.	Valuation not to exceed \$100 per ton.	Valuation not to exceed \$300 per ton.	Lead Bullion, Copper Matte, Bar and Black Copper, valuation not to exceed \$300 per ton.	Lead Bullion, Copper Matte, Bar and Black Copper, valuation not to exceed \$300 per ton.
Guaymas...Mex.	El Paso	10.00	11.50	13.50			2.20	2.60	3.00	5.00	5.00
	Pueblo	12.50	14.00	16.00			5.50	7.00	8.00	10.20	11.00
	Denver	13.50	15.00	17.00			6.50	8.00	9.00	11.20	12.00
	Kansas City	15.00	17.00	19.00			7.50	9.00	11.00	14.20	16.00
Ortiz....."	El Paso	8.50	11.00	13.00			2.20	2.80	3.80	5.40	5.40
	Pueblo	12.00	13.00	15.50			5.20	6.70	8.70	10.00	10.80
	Denver	13.00	14.50	16.50			6.20	7.00	9.70	11.00	11.80
	Kansas City	14.50	16.00	18.00			7.20	8.00	10.70	13.80	15.50
Torres....."	El Pasc	8.00	10.50	12.50			2.40	3.00	4.50	5.60	5.60
	Pueblo	11.50	13.00	15.00			5.20	6.70	8.70	9.80	10.60
	Denver	12.50	14.00	16.50			6.20	7.00	9.70	10.80	11.60
	Kansas City	13.50	15.00	17.00			7.20	8.00	10.70	13.40	15.40
Hermosillo...."	El Paso	8.50	10.00	12.00			2.40	3.00	4.70	5.80	5.80
	Pueblo	10.00	12.50	14.50			5.20	6.70	8.70	9.80	10.40
	Denver	12.00	13.50	15.50			6.20	7.00	9.70	10.80	11.60
	Kansas City	13.00	15.00	17.50			7.20	8.00	10.70	13.20	15.20
Pesqueira....."	El Paso	8.00	9.50	11.50			2.80	3.60	5.10	6.20	6.20
	Pueblo	10.50	12.00	14.00			5.00	6.50	8.50	10.00	10.60
	Denver	11.50	13.00	15.00			6.00	7.50	9.50	11.60	12.00
	Kansas City	12.00	15.00	17.50			7.00	8.00	10.50	13.00	15.50
Querobabi...Santa Ana...."	El Paso	7.50	9.00	11.00			2.60	3.20	4.70	5.80	5.80
	Pueblo	10.00	11.50	13.50			5.00	6.50	8.50	10.00	10.60
	Denver	11.00	12.50	14.50			6.00	7.50	9.50	11.60	12.00
	Kansas City	11.50	13.00	15.00			7.00	8.00	10.50	13.00	15.50
Magdalena...."	El Paso	7.00	8.50	10.50			3.00	4.00	5.50	7.00	7.00
	Pueblo	9.50	11.00	13.00			6.00	7.50	9.50	10.40	11.40
	Denver	10.50	12.00	14.00			7.00	8.00	10.50	12.00	15.00
	Kansas City	11.50	13.00	15.00			8.00	10.00	12.00	14.00	16.00
Imuris....."	El Paso	7.00	8.50	10.50			3.00	4.00	5.50	7.00	7.00
	Pueblo	9.50	11.00	13.00			6.00	7.50	9.50	10.40	11.40
	Denver	10.50	12.00	14.00			7.00	8.00	10.50	12.00	14.00
	Kansas City	11.50	13.00	15.00			8.00	10.00	12.00	14.00	16.00
Nogales...A.T.	El Paso	6.50	8.00	10.00			3.00	4.00	5.50	7.00	7.00
	Pueblo	8.00	10.50	12.50			5.00	6.50	8.50	10.00	10.60
	Denver	9.00	11.50	13.50			6.00	7.50	9.50	10.40	11.40
	Kansas City	11.00	12.50	14.50			7.00	8.00	10.50	12.00	15.00
Calabasas...."	El Paso	6.00	7.50	9.50			3.00	4.00	5.50	7.00	7.00
	Pueblo	8.50	10.00	12.00			5.00	6.50	8.50	10.00	10.60
	Denver	9.50	11.00	13.00			6.00	7.50	9.50	11.60	12.00
	Kansas City	10.50	12.00	14.00			7.00	8.00	10.50	13.00	15.00
Sanfords...."	El Paso	5.50	7.00	9.00			3.00	4.00	5.50	7.00	7.00
	Pueblo	8.00	9.50	11.50			5.00	6.50	8.50	10.00	10.60
	Denver	9.00	10.50	12.50			6.00	7.50	9.50	11.60	12.00
	Kansas City	10.00	11.50	13.50			7.00	8.00	10.50	13.00	15.00
Crittenden...."	El Paso	5.50	7.00	9.00			3.00	4.00	5.50	7.00	7.00
	Pueblo	8.00	9.50	11.50			5.00	6.50	8.50	10.00	10.60
	Denver	9.00	10.50	12.50			6.00	7.50	9.50	11.60	12.00
	Kansas City	10.00	11.50	13.50			7.00	8.00	10.50	13.00	15.00
Fairbank...."	El Paso	4.40	4.60	6.50			2.50	3.00	4.00	5.00	5.00
	Pueblo	8.00	9.50	11.50			5.00	6.50	8.50	10.00	10.60
	Denver	9.00	10.50	12.50			6.00	7.50	9.50	11.60	12.00
	Kansas City	10.00	11.50	13.50			7.00	8.00	10.50	13.00	15.00
Tucson...."	El Paso	4.35	4.35	5.50			2.50	3.00	4.00	5.00	5.00
	Pueblo	9.00	10.50	12.50			5.00	6.50	8.50	10.00	10.60
	Denver	10.00	12.00	14.00			6.00	7.50	9.50	11.60	12.00
	Kansas City	11.00	13.00	15.00			7.00	8.00	10.50	13.00	15.00
Benson...."	El Paso	8.00	8.50	11.50			2.50	3.00	4.00	5.00	5.00
	Pueblo	10.00	11.50	13.50			5.00	6.50	8.50	10.00	10.60
	Denver	9.00	10.50	12.50			6.00	7.50	9.50	11.60	12.00
	Kansas City	10.00	11.50	13.50			7.00	8.00	10.50	13.00	15.00
Lordsburg...."	El Paso	4.35	4.35	5.50			2.50	3.00	4.00	5.00	5.00
	Pueblo	9.00	10.50	12.50			5.00	6.50	8.50	10.00	10.60
	Denver	10.00	12.00	14.00			6.00	7.50	9.50	11.60	12.00
	Kansas City	11.00	13.00	15.00			7.00	8.00	10.50	13.00	15.00
Silver City...."	El Paso	2.60	3.20	4.70			1.50	2.00	2.50	2.75	2.75
	Pueblo	6.50	8.00	10.00			2.00	2.50	3.00	3.25	3.25
	Denver	7.50	9.00	11.50			2.50	3.00	3.50	3.75	3.75
	Kansas City	8.50	10.00	12.00			3.00	3.50	4.00	4.25	4.25
Steins Pass,N.M.	El Paso	8.00	8.50	11.00			1.50	2.00	2.50	2.75	2.75
	Pueblo	9.50	11.00	13.00			2.00	2.50	3.00	3.25	3.25
	Denver	10.50	12.00	14.00			2.50	3.00	3.50	3.75	3.75
	Kansas City	11.00	13.00	15.00			3.00	3.50	4.00	4.25	4.25
A.T. & S. F. R. R. S. C. D. & P. R. R. SOUTHERN PAC. CO. NEW MEXICO & ARIZONA R. R.	El Paso	2.20	2.60	3.60	5.00	5.60	5.60	6.50	7.00	7.00	7.00
	Pueblo	6.00	7.50	9.50	10.50	11.00	11.00	12.00	13.00	13.00	13.00
	Denver	7.00	8.50	10.50	11.50	12.00	12.00	13.00	14.00	14.00	14.00
	Kansas City	8.00	8.50	11.50	15.00	17.00	17.00	18.00	19.00	19.00	19.00
E. T. & S. F. R. R. ATLANTIC & PACIFIC RAILROAD	El Paso	2.20	2.40	3.40	4.80	4.80	4.80	5.50	6.00	6.00	6.00
	Pueblo	6.00	7.00	9.00	10.00	11.00	11.00	12.00	13.00	13.00	13.00
	Denver	7.00	8.50	10.50	11.50	12.00	12.00	13.00	14.00	14.00	14.00
	Kansas City	8.00	8.50	11.50	15.00	17.00	17.00	18.00	19.00	19.00	19.00
Rincon....."	El Paso	2.00	2.00	3.00	4.00	4.00	4.00	4.50	5.00	5.00	5.00
	Pueblo	5.50	7.00	9.00	10.00	11.00	11.00	12.00	13.00	13.00	13.00
	Denver	6.00	8.00	10.00	11.00	12.00	12.00	13.00	14.00	14.00	14.00
	Kansas City	7.00	8.00	11.00	15.00	17.00	17.00	18.00	19.00	19.00	19.00

Rates on Copper or Zinc Ore to Canon City.

Taking Effect July 1st, 1891.—So far as rates on Copper or Zinc Ores are concerned, Canon City, Col., will be considered as common with Pueblo; in other words the rates shown in Tariff as applying on shipments of Ore or Concentrates, or Base Metal, Agents will bill at rates sufficiently high to protect the Company. These rates can be corrected when evidence of actual value is produced. The market price at destination, to be verified by assays made

by the Railroad Company, at owner's expense, will govern the value and determine the rate.

Agents must cause shippers to understand the condition upon which these rates are based, and should make their receipts read: "Rates subject to correction according to value at destination." These rates only apply on lots of ten tons or over. On lots of four tons and under ten, 20 per cent, and on lots of one ton and less than four, 40 per cent will be added to above rates. Base Metal, Copper Matte and Ore Concentrates in lots of less than one ton, will take first-class rates from all the above points, except when the rate based on valuation makes it higher, that rates on small lots of high value may not be less than the rates when in lots of one ton or over as above.

Charges on Ore in car-loads must be guaranteed, and on lots less than a car-load must in all cases be prepaid;

Omaha Rates.—The Rates to Omaha, Neb., all grades, will be \$1 per ton higher than the rates to Kansas City.

Note.—All shipments of Ore and Concentrates valued not to exceed \$50 per ton must be billed at the rate for Ore and Concentrates, "Valuation over \$50 not to exceed \$100 per ton," and shipping receipt must be issued by agent at said rate. Agent at destination is authorized to correct the rate for Ore and Concentrates, "Valuation not to exceed \$50 per ton," upon presentation of properly certified smelter returns, showing that the value does not exceed \$50 per ton.

Intermediate points not named will take rates provided for next station beyond.

SOUTHERN CALIFORNIA RAILWAY.

Rate on Ore in car loads, valuation not to exceed \$50 per ton, minimum weight 24,000 lbs. Oro Grande, Cal., to Pueblo, Col., \$10.35 per ton.

Ore, car loads, when coming from the Republic of Mexico valuation not to exceed \$50 per ton; San Diego or National City to Denver, Col., and Pueblo, Col., \$12 per ton of 2,000 lbs.

Ore, valuation not to exceed \$100 per net ton and so received for, minimum weight 30,000 lbs. 75¢ per 100 lbs., to Denver and Pueblo, Col., from all points on the Southern California Railway.

ORE TARIFF.

From Points in New Mexico, Arizona and California, to El Paso, San Francisco and Vallejo Junction.

SOUTHERN PACIFIC R. R. COMPANY.

FROM	TO	Valuation not to exceed \$25 per ton.	Valuation not to exceed \$50 per ton.	Valuation not to exceed \$100 per ton.	Valuation not to exceed \$200 per ton.	Lead Bullion, Copper Matte, Bar and Black Copper, value not to exceed \$300 per ton.
El Paso, Tex.	San Francisco	\$9.10	\$10	\$10	\$11.20	...
Deming, N.M.	El Paso	2.00	2.00	2.20		

THE PUEBLO Smelting and Refining Company,

PUEBLO, COLORADO.

BUYERS OF

Gold, Silver, Lead and Copper Ores,
Copper Matte and Bullion.

Refiners of Gold, Silver, Lead and Copper.

Manufacturers of Bar and Pig Lead, Lead Pipe, Antimonial Lead, Copper Ingots,
Granulated Test Leads and Litharge.

Pays Highest Prices for all classes of Ores.

Especial Attention to Sampling by most Approved Processes.

Quick Returns on all Consignments.

CHAS. B. BOOTHE & CO.

— Dealers in —

Engines, Boilers, Pumps, Shafting Hangers, Pulleys, Belting, Lubricating Oils,

Engineering Supplies Mining Hoists Irrigating, Oil Well,

IRON and WOODWORKING Machinery

— Of All Kinds —

Electrical Machinery and Apparatus.

We invite an inspection of our goods at the New Store,

126-128 S. Los Angeles Street,

Los Angeles, Cal.

VULCAN ROPEWAY

With Automatic Ore Loader and
Automatic Dumping Device

*
For Conveying
Ore,
Cordwood,
Etc.
*



EMPIRE, NEVADA, April 17th, 1898

Vulcan Iron Works.—GENTLEMEN. The rope-way furnished by your Company to convey tailings from Morgan Mill to Mexican Mill, a distance of seven-eights of a mile, is giving entire satisfaction. We transport 200 tons of tailings in ten hours; one man does the whole business, including elevating tailings from hopper in the ground, operating Vulcan self-loader, and attending to the ropeway generally. The self-dumper requires no attention whatever. The Vulcan loader I consider the best feature in the whole Ropeway, making it possible for one man to load 200 tons in ten hours.

Yours very truly,

J. P. WOODBURY, Supt.

VULCAN IRON WORKS,

Manufacturers of Mining Machinery,
SAN FRANCISCO CAL.

Babbitt Metal

Eclipse, guaranteed best Babbitt Made
COPPER FOR AMALGAMATING PLATES.
Braziers Sheet Copper.

BATTERY ZINCS, ROOFING TERNE PLATE

Pacific Metal Works,
137-139 FIRST ST., SAN FRANCISCO, CAL.

CLARENCE HERSEY,
Assayer and Chemist,
(Established 1870)

LEADVILLE, COLORADO

Samples by Mail or Express Re-
ceive Prompt Attention

SPECIMEN ASSAY PRICES:

Gold silver and lead, \$1.00; any two of the
above, 75c; any one of above, 50c; copper analy-
sis, \$1; platinum, nickel or tin, \$5.00.

Write for full price list and mailing envelopes.

Fraser & Chalmers

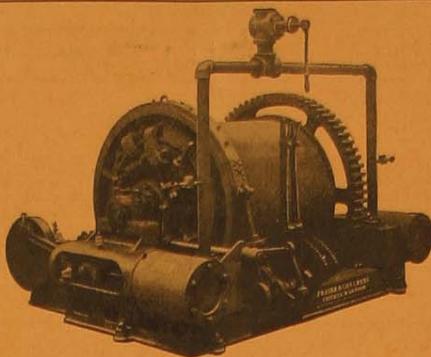
CHICAGO, ILL.

Have Brought Out a New Line of
MEDIUM SIZED

STEAM HOISTING ENGINES



These are designed with great care by engineers familiar with the best previous practice, and knowing just what is wanted to render satisfactory service on a mine. Do you want such service? Then buy one of these improved machines.



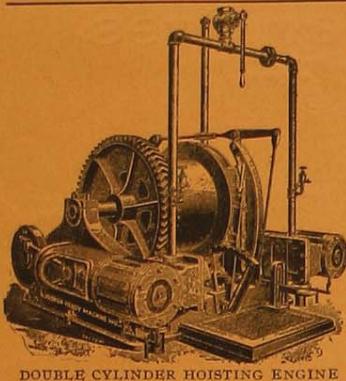
OUR SPECIAL LINES OF MANUFACTURE

On which we would be glad to quote are:

STAMP MILLS, SMELTING FURNACES,
CYANIDE PLANTS, ORE CRUSHERS,
FRUE VANNER CONCENTRATORS,
RIEDLER AIR COMPRESSORS AND PUMPS,
OTTO AERIAL TRAMWAYS,
SHOES, DIES, CAMS,
ROLLS AND JIGS.

Qualified by a Quarter Century of Experience to render you the best of service we invite your inquiries and Patronage.

Fraser & Chalmers,
CITY OF MEXICO:
DENVER, COLO.
SALT LAKE CITY, UTAH
80 BROADWAY, N.Y.



DOUBLE CYLINDER HOISTING ENGINE

JOSHUA HENDY MACHINE WORKS,

Nos. 38 to 44 Fremont St.
SAN FRANCISCO, CAL.

Manufacturers of and Dealers in

All the Latest Improved

Quartz Milling, Pumping, Smelting and Electrical
Machinery, Boilers & Engines OF ALL POWERS,
Mine and Mill Supplies.

BUILDERS of "HENDY" IMPROVED "TRIPLE-DISCHARGE" TWO-STAMP MILLS

PLANS, SPECIFICATIONS and ESTIMATES OF COST FURNISHED and CONTRACTS MADE
FOR FURNISHING and ERECTING MINING and MILLING PLANTS for all conditions of Use.

BAKER IRON WORKS

LOS ANGELES, CALIFORNIA

Mining and Milling Machinery, Atlas Engines and Boilers, Worthington Steam Pumps

Water Works Machinery
A SPECIALTY

RISDON IRON WORKS

Office and Works, Cor. Beale and Howard Sts., San Francisco

— MANUFACTURERS OF —

Johnston Concentrators

Risdon Improved Concentrators, Frue Type

Bryan Patent Roller Quartz Mills

Evans' Patent Hydraulic Gravel Elevators

Risdon Ore Feeders, 'Challenge' Type

Air Compressors

Mining, Milling, Pumping
and Hoisting Plants,

Risdon Pat. Water Wheels,

"PELTON TYPE"

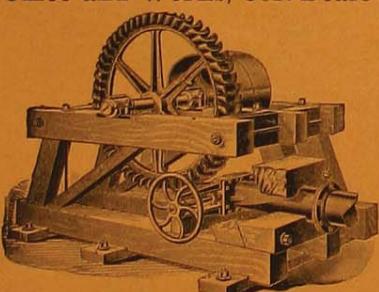
KNIGHT WATER WHEELS

GOLD AND SILVER STAMP MILLS

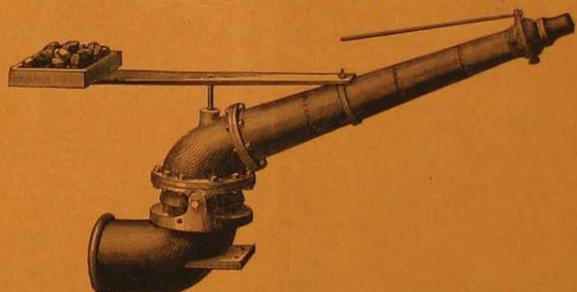
Catalogues and Prices on Application

Bison Hammered Steel Shoes and Dies

Cable Address, "Risdon's," San Francisco



The above cut shows the general arrangement of Knight's Standard Water Wheel, of which there are more than 450 in use in California alone. These wheels are made from 2 feet to 6 feet in diameter, from 10 to 1000 horse power, and adapted to all heads and purposes. Descriptive circulars mailed free on application.



IMPROVED HYDRAULIC GIANT

The above cut illustrates the improved form of Hydraulic Giants, in which the Center Bolt is dispensed with, which was so liable to catch trash. Prices and catalogues of our specialties sent free on application.

PARKE & LACY COMPANY

21 and 23 Fremont St., San Francisco, Cal.



MINING MACHINERY

SOLE AGENTS FOR
THE INGERSOLL-SERGEANT AIR COMPRESSORS AND ROCK DRILLS.

SOLE LICENSEE FOR THE MANUFACTURE AND SALE OF
THE ROSS STRAIGHT LINE FURNACE, For Roasting, Chlorinating and Desulphurizing Ores.

WE CARRY IN STOCK

Horizontal, Vertical and Portable Engines and Boilers. Rock Breakers, Cornish Rolls, Pulverizers, Concentrators, Ore Feeders. Hoisting Engines, Horse Power Hoisting Whims, Water Wheels, Steam Pumps, Ore Cars, Wire Rope, Ore Buckets, Water Buckets, Skips. Blowers and Exhaust Fans, Shafting and Pulleys. Belting, Oils and Mine Supplies. **Manganese Steel Shoes and Dies**

Estimates Furnished for Complete Plants for Hoisting Works, Smelters, Concentrating and Stamp Mills.

